

THE IRON AGE

THURSDAY, SEPTEMBER 1, 1892.

MAKING GREAT GUNS.

Shrinking On Jackets and Hoops.

One of the most interesting operations connected with the building of breech-

of 1 tube, 1 jacket and 27 hoops, arranged as shown in Fig. 11. The first step is to place the jacket on the tube, after which the hoops follow in regular order. The care and skill called for by this work will be appreciated when we state that neither the jacket nor either one of the hoops will

lated compression. It is evident that a very slight error in either the diameter of the encircling part or of its seat, we may call it, will destroy these conditions and produce a gun not having the greatest strength, and, in fact, one in which the stresses will not be known and cannot be

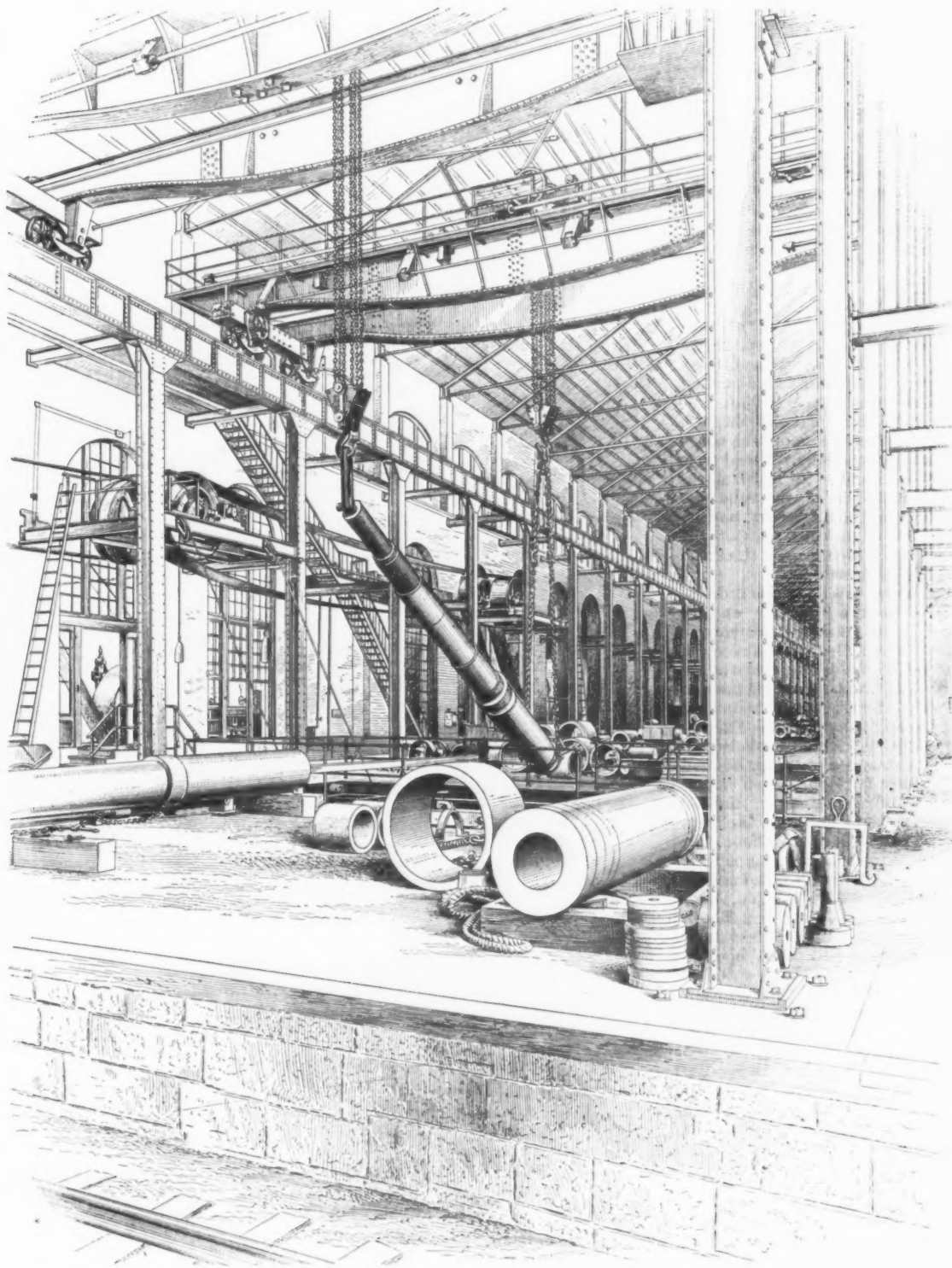


Fig. 1.—Gun, Carried by Two Cranes, Entering Shrinkage Pit.

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loading rifles of large caliber is the shrinking of the jackets and hoops on the tube, the latter serving as a foundation upon which the others are built up. The 10-inch gun, which we propose to follow through the various stages of work performed at the shrinkage pit, is composed

go on the place intended to receive it until it has been heated to a certain temperature, the expansion then resulting permitting it to slip into place. When the part fitted on has been cooled it should be under a predetermined tensile strain, and the part it encircles under a calcu-

ascertained. It is for this reason that all boring and turning operations are performed so accurately.

Through the kind courtesy of the officers of the Ordnance Department of the United States Army, we were recently granted the privilege of seeing this work as carried on

at the Watervliet Arsenal, West Troy, N. Y., and of taking such photographs as were necessary in order to show the various steps. An article of this kind naturally divides itself into two parts, the first being descriptive of the work performed at the shrinkage pit and including the method of handling the gun, placing it in the pit, heating and putting the jacket and hoops on the gun, and the final removal of the gun from the pit. This portion of the article is in no sense technical, the second part being devoted to the specifications and detailing the requirements the steel must conform with, the tensile and compression strains, gauging, and final testing.

Description of the Parts.

The tube for the 10-inch gun, as it is received from the Bethlehem Iron Works, weighs 18,945 pounds, and has been rough turned and bored. This tube is enveloped by the jacket and by the C hoops. The jacket projects to the rear of the tube 16.2 inches, and is in contact with the tube for a length of 120.8 inches. The C hoops extend from the front of the jacket to the muzzle of the gun, a distance of 206.25 inches, the C¹ hoop being in contact with the jacket, and the hoops succeeding each other in the order of their numbers, C³ being the muzzle hoop. Hoops C⁴ to C⁶ are stepped—that is, the interior of each of these hoops has two diameters differing from each by from 0.25 to 0.65 inch. The tube has corresponding diameters and steps, and therefore the diameter of the tube is gradually reduced from 18.20 under the jacket to 14.50 at the muzzle. The thickness of the tube over the powder chamber is 3.2 inches, and its maximum thickness in the front of the shot chamber is 4.1 inches. Its thickness at the muzzle is 2.25 inches.

The four D hoops extend in the order of their numbers from a shoulder on the jacket toward the muzzle, a distance of 83.75 inches. The D¹ hoop has a recess in its interior which fits over corresponding shoulders on the front of the jacket and the rear of the C¹ hoop; the D¹ hoop thus locks the C¹ hoop to the jacket. The filling ring is a split ring which is placed between the front shoulder of the jacket and the hoop to allow for longitudinal expansion in heating and shrinking on the D¹ hoop. This D¹ hoop envelops the front end of the jacket and part of C¹ hoop.

The A hoops extend in the order of their numbers from a shoulder near the middle of D¹ hoop to the rear of the gun, their total length being 138.75 inches. The B hoops extend in the order of their numbers from the shoulder on the A¹ hoop to the rear of the gun. The exact position of all these parts will be seen by consulting the longitudinal section of the gun, Fig. 11, in which it will be noticed that hoops D¹, D² and C⁷ are more heavily shaded than the other parts. This is done because these hoops were being put in position when the accompanying photographs were taken. This drawing also gives all the principal dimensions of the gun as a whole, together with the lengths and diameters of the jacket and hoops.

The first work done on the tube is the turning of that portion destined to receive the jacket to a diameter of 18.2 inches. The tube is then removed from the lathe and by means of traveling cranes taken to the pit, in which it is placed muzzle end down. The jacket, which has been previously bored to the proper diameter to fit the tube, and which for several hours has been heating in the furnace from which it is just being removed, as shown in Fig. 5, is then lowered down over the tube. After having been cooled, the tube with its jacket is taken back to the lathe and turned in order to receive the next hoops. Of course the position of the gun in the pit—that is, whether it is muzzle or breech end up—depends upon the hoops to be put

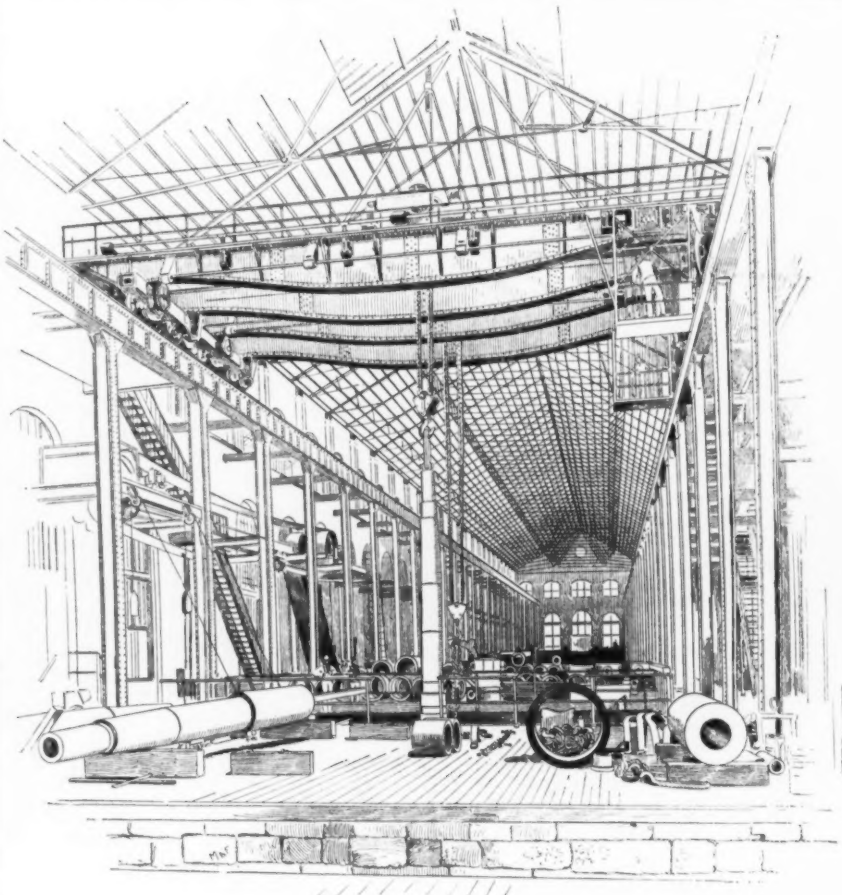


Fig. 2.—Gun Suspended Over Pit.

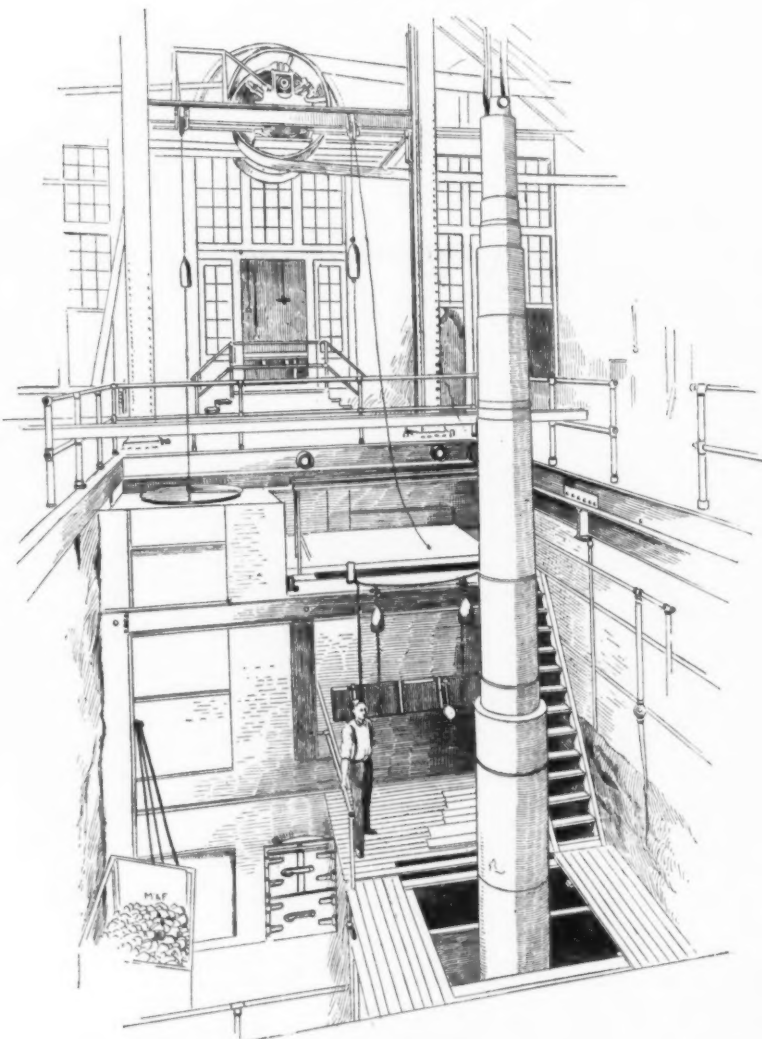


Fig. 3.—Gun Being Lowered into Pit.

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on. In general it may be stated that all the C and D hoops are put on with muzzle up; the others, with muzzle down. Only two or three hoops can be put on at the

and the lathes, and also makes necessary a very thorough and extended system of gauging in order to insure accuracy in the sizes.

to be placed muzzle up, is at the muzzle end of the gun, the breech end of the gun being encircled by a band formed with two hooks. Two overhead traveling

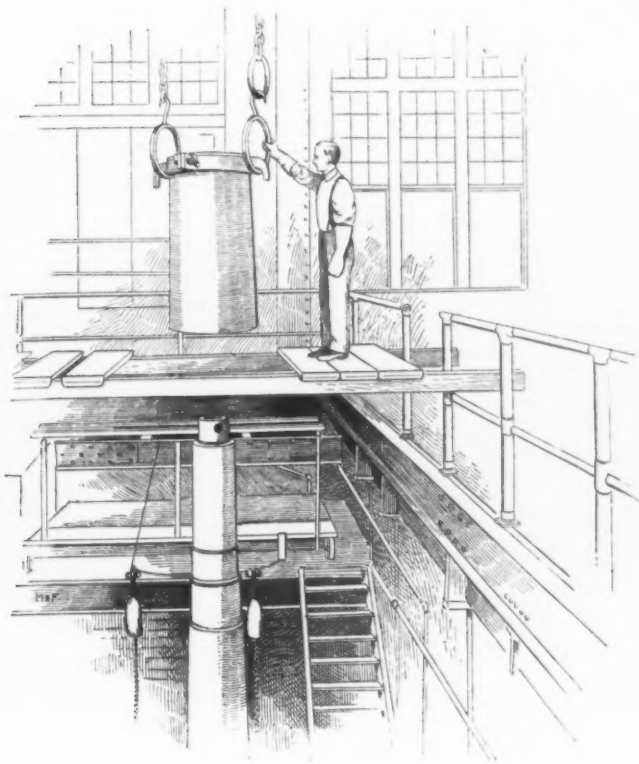


Fig. 4.—D Hoop Lifted from Furnace.

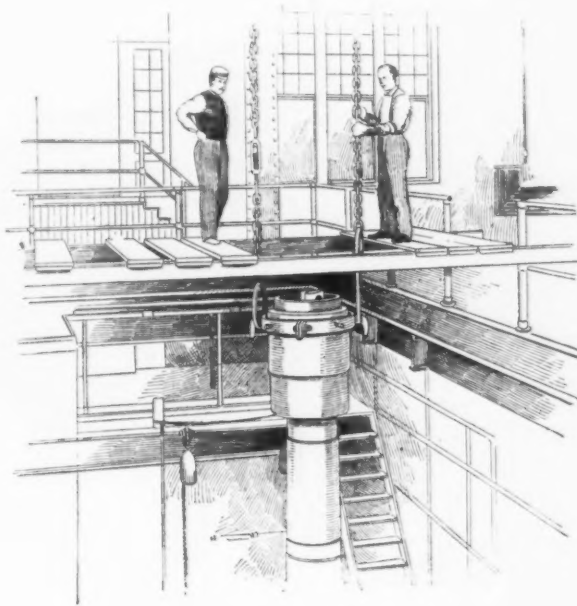


Fig. 6.—D Hoop Being Lowered Over Gun.

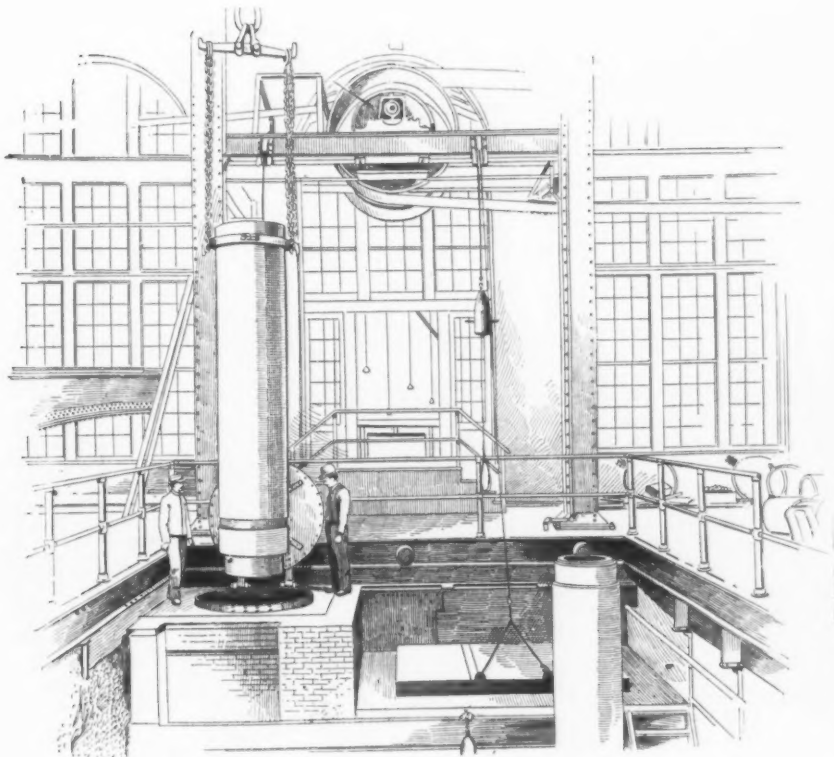


Fig. 5.—Jacket for 12-Inch Gun Being Raised from Furnace.

(For the Photograph from which this Engraving was made we are indebted to Mr. Anthony Victorin.)

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same time, and after each shrinkage operation the gun must be taken back to the lathe, turned for the next set of hoops and brought to the pit in order to receive them. This makes it necessary to carry the gun several times to and fro between the pit

Placing the Gun in the Pit.

The first step toward placing the gun in the pit is to pass through the bore a steel rod 3 or 4 inches in diameter and provided with a link at one end and a nut at the opposite end. The link, when the gun is

cranes are now brought into service, one attaching its lifting chains to the band around the breech and the other its chains to the link at the muzzle. The cranes then move forward until the breech end of the gun is over the shrinkage pit, when the crane carrying that end begins to lower, the other end gradually approaching it until finally, as shown in Fig. 2, the gun is carried wholly by the crane having hold of the muzzle, the other crane being relieved of its load as soon as the gun has assumed a vertical position. The gun is then lowered, as shown in Fig. 3, into the pit, and after it has been securely clamped in its upright position the last crane is unhooked. In removing the gun from the pit the same operation precisely is gone through with, though, of course, in reverse order.

Shrinkage Pit.

The perspective engravings, and also the sectional and plan views, Figs. 8, 9 and 10, convey a good idea of the general arrangement of the shrinkage pit. This consists merely of a rectangular hole sunk in the center of the shop and having a depth sufficient to take in the longest gun it is proposed to build and not have it extend above the floor level. At one side of the pit are two furnaces, in one of which, B, three or four hoops can be heated, and in the other of which, A, the jacket can be heated. The hoop furnace is rectangular in plan, while the jacket furnace is circular. An important point in the heating operation is to maintain a uniform temperature, and at the same time to keep away from the part heated the products of combustion, which might have a hurtful effect upon it. For this reason the furnaces consist of a mere shell of iron, around which circulate the products of combustion, passing from the fire box around these shells and finally entering the boiler smoke stack. In this way the jacket and hoops are heated solely by radiation, and the temperature can be regulated to a nicety, and at the same time it is not possible to injure

the metal by reason of any chemical change.

Handling the Jacket and Hoops.

Both the jacket and hoops, before being placed in the heating furnace, are encircled by a band placed near one end and provided with two hooks to receive rings carried by the hoisting chain of the crane, as shown in Figs. 4, 5 and 6. When it is thought that the jacket has been heated to the proper temperature, the crane is brought into play, its chain hooked on and the jacket lifted from its furnace. The inspector then passes the gauge into the interior, to ascertain by actual measurement whether the expansion has been sufficient to permit of the jacket passing freely down over the tube. If in his judgment it will not go down, it is replaced in the furnace and heated to a higher temperature. The same thing exactly takes place with all the hoops. No guess work is allowed; and unless the expansion has been surely sufficient to permit of the free passage of the part it is heated still further.

The absolute necessity of this will be understood when we state that a slight mistake might result in the loss of thousands of dollars. The tube for the 10 inch gun weighs 18,945 pounds, the jacket weighs 18,115 pounds, and the cost, delivered at the arsenal, is from 27 to 33 cents a pound; and as the work done up to this stage is about the same on both, they have an equal money value. An interesting point would come up if for any reason, due to warping of the jacket or to a mistake in calculations of the size of the tube or of the bore of the jacket, it should fail to reach its proper seat; the question then would be whether to destroy the tube or the jacket. In other words, the cost of both being the same, whether to bore the tube out of the jacket or to turn the jacket off of the tube. Of course, if one of the hoops should fail to reach its proper position for any reason the hoop would be turned off, since the cost then would be

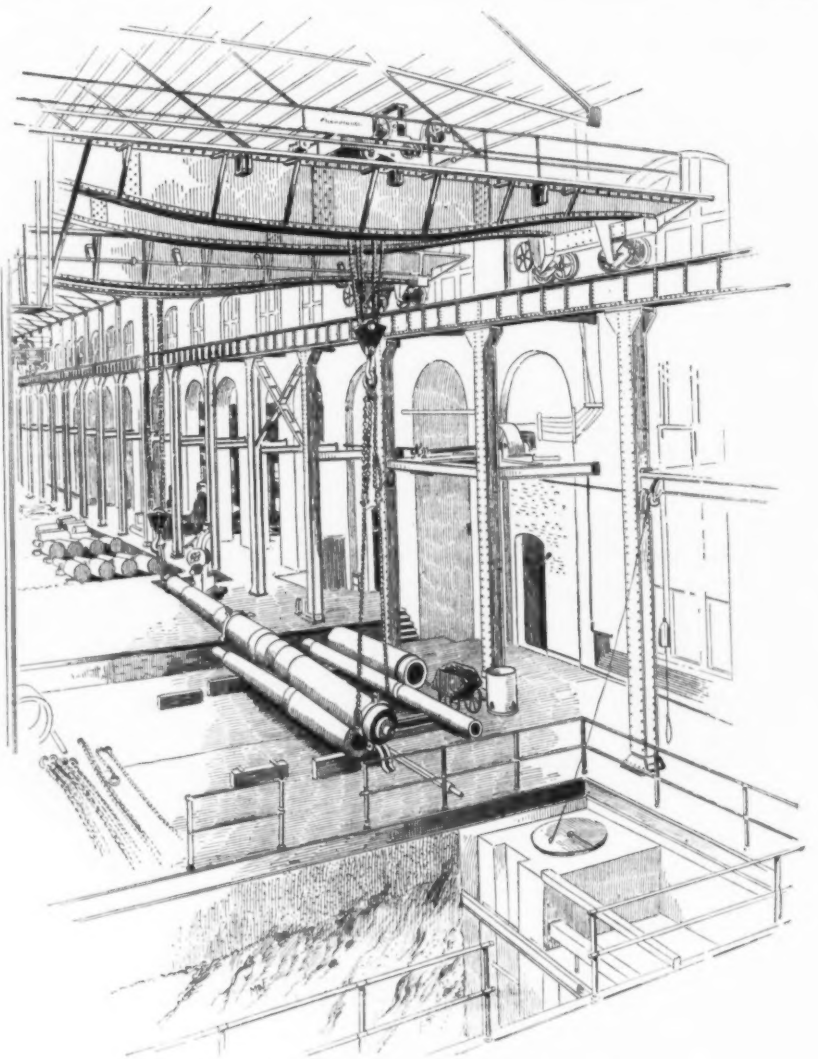


Fig. 7.—Gun Raised from Pit—Carried by Both Cranes.

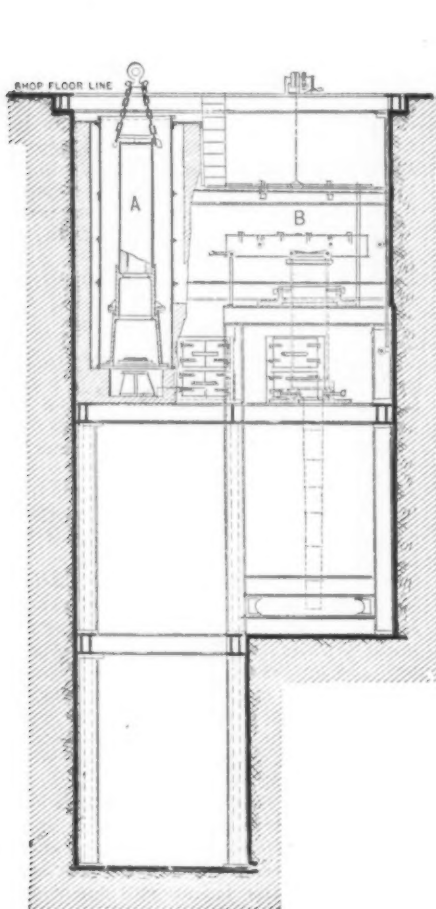


Fig. 8.—Section of Shrinkage Pit.

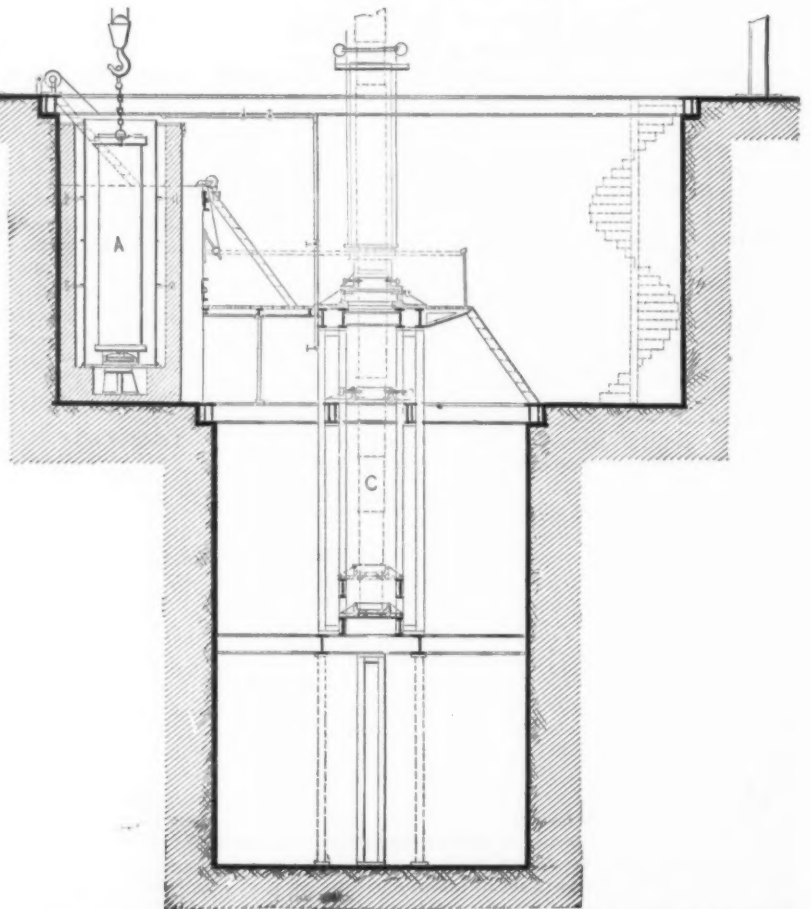


Fig. 9.—Section of Shrinkage Pit at Right Angles to Fig. 8.

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too greatly in favor of the gun, as far as it had gone. We might add in parenthesis that up to this time no difficulty of this kind has been experienced. In every case the jackets and hoops have gone to their proper position, so that a discussion of what would be done in case of a slip might seem to be premature.

Cooling.

Encircling the gun as it stands in the pit is an iron pipe, provided in its inner side with rows of holes, and suitably connected with a water supply, in order that jets of water may be played upon the hoop after it has been placed in position. In the case of the D¹ hoop, which is shown going down over the gun in Figs. 4 and 6, and the position of which is shown in Fig. 11, the water is first sprayed upon the lower edge, the object being to contract this portion by cooling and make it grip the end of the jacket over which it passes for a short distance, and then to raise the water circle, gradually cooling from the bottom up. The first binding takes place at the lower edge of the hoop, and any subsequent movement is from the upper end downward as the metal cools and contracts. It is the same way with D² hoop and C⁷ hoop. After the hoops

gun contains, without any exaggeration, thousands of measurements which represent every stroke of work which has been done upon that gun, and show the effect. Inside gauging is done by means of the ordinary star gauge, working upon the wedge principle. These measurements serve one most essential purpose. Take as an illustration the D¹ hoop. If the seat destined for this hoop and the hoop itself have been worked to the proper sizes, the hoop will exert a certain strain upon the jacket and tube it encircles. This strain will produce a known compression upon these parts, and therefore a certain reduction in the diameter of the bore will result. If this reduction in diameter is excessive, it is evident that the hoop has been bored too small, and is therefore under too great a tensile strain. On the contrary, if the bore has not been reduced in diameter up to the limit, it shows that the hoop has been bored to too great a diameter and is not under the tensile strain it should be, and therefore has not brought the other members under a proper degree of compression.

In the case of the jacket especially, and that portion of the tube destined to receive it, it is most essential that both should be truly cylindrical. The jacket is several

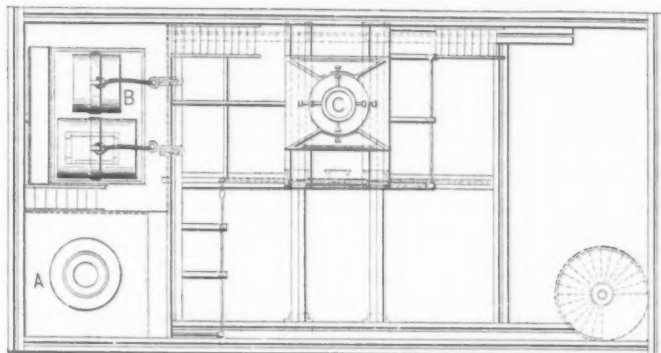


Fig. 10.—Plan of Shrinkage Fit.

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have been cooled sufficiently by the jet of water, the gun is removed from the pit and generally left over night, in order that the parts may become all of one temperature, and then taken back to the lathe for other operations of turning. But before being taken to the lathe every inch of the bore likely to be at all affected by the three hoops just shrunk on is carefully measured by means of a star gauge. In order to show the tremendous pressure exerted by these hoops we may mention that the hoops D¹ D², although acting through the metal in the tub, the jacket and hoops C¹ C², produced a maximum reduction in the diameter of the bore of 0.0065 inch.

The Log Book of the Gun.

A record of every gun is kept in what we have termed a log book of the gun. As we have before said, every step in the manufacture is accurately measured, and there must not be a variation of more than a quarter of a thousandth from a prescribed dimension. In turning the tube and boring the jacket to fit, the endeavor is to get as fine work as possible and as true surfaces free from tool marks. In boring the tube for the hoops, and in boring the hoops themselves, this is not aimed at, since a certain degree of roughness is considered an advantage. Nevertheless, the measurements must be accurate, and for this reason we find that the log book of a completed

feet in length, and even when heated it is but the fraction of an inch larger in diameter than the tube, so that it would only require a very slight variation from a true cylinder in order to prevent its passage over the tube. It is, therefore, necessary in this case to make sure not only that the diameters at each inch of the length are correct, but also that the tube and bore of the jacket are perfectly cylindrical.

Physical Qualities of the Steel.

We can, perhaps, convey the clearest idea of the physical qualities of the steel by condensing the report of the Inspector of Ordnance at the Bethlehem Iron Works. From tabulated statements presented in the report of the Chief of Ordnance for the year 1890, we find that tests of tangential specimens from the ends of tubes for 8-inch breech-loading rifles showed tensile strength per square inch of from 84,400 pounds up to 100,000 pounds, elongation from 20 to 25 per cent., and reduction in area after rupture from 30 to 47 per cent. Tests of specimens from the jackets showed tensile strength per square inch of from 90,000 pounds to 108,000 pounds, elongation from 20 to 23 per cent., and reduction in area after rupture from 30 to 44.5 per cent. In the tests of specimens taken from the inside, outside and middle of trunnion hoops and plain hoops, the tensile strength in only a very few

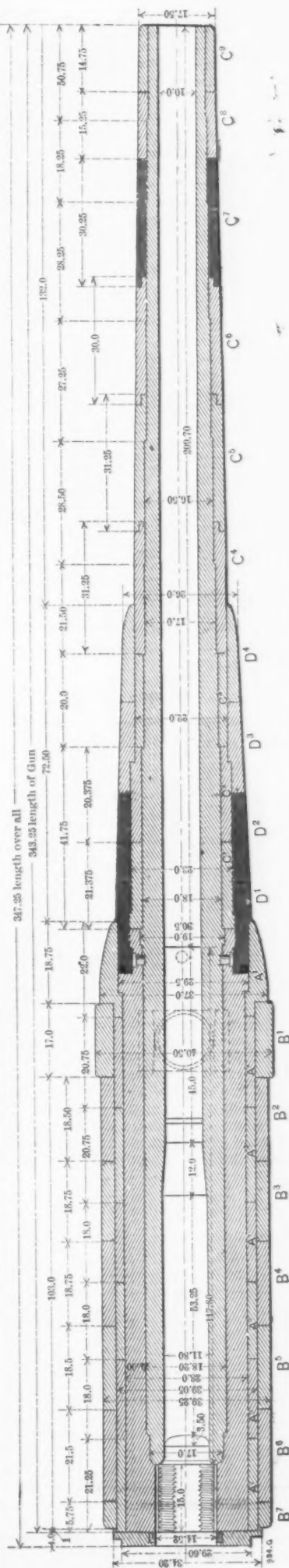


Fig. 11.—Longitudinal Section of 10-Inch Breech-loading Rifle.

cases fell below 100,000 pounds to the square inch.

Shrinkages.

The shrinkages given in the accompanying table are to be understood as differences of diameter simply. In general, the outer diameters of the hoops, except the trunnion hoop, which is finished completely, are rough finished to about 0.10 inch in excess of the prescribed diameters preparatory to assemblage. As the shrinkage in no case exceeds 0.045 inch, this surplus will leave sufficient metal for the shrinkage finish.

Shrinkages Used.

FIRST SHRINKAGE.

Section of gun.	Prescribed shrinkage.	Actual shrinkage.	Allowed variation.	Actual variations.
	Inch.	Inch.	Inch.	Inch.
II.....	0.006	0.003375	-0.003	-0.0025025
III.....	0.010	0.006564	-0.003	-0.003436
IV.....	0.010	0.008875	-0.003	-0.001125
V.....	0.010	0.010162	-0.003	+0.000162
VI.....	0.010	0.0100357	-0.003	+0.00036
VII.....	0.010	0.00950	-0.003	-0.00050
VIII.....	*0.015	0.014416	-0.003	-0.000583
IX.....	0.025	0.02406	-0.003	-0.00094
X.....	0.023	0.020375	-0.003	-0.00256+
XI.....	0.019	0.018548	-0.003	-0.00045+
XII.....	0.018	0.016543	-0.003	-0.00145+
XIII.....	0.017	0.014408	-0.003	-0.00259+
XIV.....	0.015	0.014321	-0.003	-0.000679
XV.....	0.014	0.012611	-0.003	-0.00138+
XVI.....	0.012	0.0091875	-0.003	-0.0028125

* For 3 inches.

SECOND SHRINKAGE.

I.....	0.042	0.042823	-0.003	+0.000823
II.....	0.042	0.04300	-0.003	+0.00100
III.....	0.046	0.045134	-0.003	-0.000866
IV.....	0.046	0.044360	-0.003	-0.00164
V.....	0.046	0.044907	-0.003	-0.001093
VI.....	0.046	0.04383	-0.003	-0.00217
VII.....	0.043	0.042425	-0.003	-0.000575
VIII.....	0.026	0.025062	-0.003	-0.000938
IX.....	0.024	0.022950	-0.003	-0.00105
X.....	0.023	0.020429	-0.003	-0.00257

THIRD SHRINKAGE.

I.....	0.030	0.029592	-0.003	+0.000408
II.....	0.044	0.04433	-0.003	-0.00067
III.....	0.044	0.045523	-0.003	+0.001523
IV.....	0.044	0.045318	-0.003	+0.001318
V.....	0.037	0.038426	-0.003	+0.001426

In the above table the values in the column "actual shrinkage-inch" are the means of the values of the actual shrinkages for each section of the gun.

The next table gives a summary of the actual final compressions of the bore as measured and the theoretical compressions obtained by formulas:

Compressions Due to Shrinkage.

Section of gun.	Calculated compression.	Actual compression.	Difference.
	Inch.	Inch.	Inch.
I.....	0.00800	0.0075968	-0.0004032
II.....	0.012008	0.012160	+0.000152
III.....	0.0153342	0.015127	-0.0002072
IV.....	0.0121000	0.012000	-0.0001000
V.....	0.0124803	0.012073	-0.0004073
VI.....	0.0091704	0.01067	+0.0014996
VII.....	0.0108213	0.01096	+0.0001387
VIII.....	0.0108399	0.0103125	-0.0005274
IX.....	0.0098798	0.0082109	-0.0016689
X.....	0.0050724	0.0056645	+0.0005921
XI.....	0.0044616	0.0051481	+0.0006865
XII.....	0.0046859	0.0048125	+0.0001266
XIII.....	0.0042577	0.004700	+0.0004423
XIV.....	0.0030998	0.0039342	+0.0008344

Time Required to Heat Jacket and Hoops.

The average time of heating the jacket and hoop and required to remove jacket

and hoop from the furnace and place them on the gun is given in the next table:

	Average time of heating the jacket.	Average time required to remove jacket and hoops and place on gun.
	H. M. S.	M. S.
Jacket*.....	21 56 00	27 00
C hoops.....	10 7	2 27
D hoops.....	18 45	1 50
A hoops.....	15 8	1 19
B hoops.....	29 8	5 44

*The jacket was put in the furnace when the fire was started.

Average Clearances.

The average clearances over shrinkage diameters in assembling are here given:

	Average clearances over shrinkage diameters.	Average expansion per inch of diameter.	Temperature corresponding to expansions.
	Inch.	Inch.	Degrees F.
Jacket...	0.056	0.00357	545
C hoops..	0.032	0.00285	450
D hoops..	0.042	0.00375	572
A hoops..	0.059	0.00377	575
B hoops..	*0.085	0.00381	581
Average		0.00357	545

*The B hoops were given the additional expansion as they had to be carried from the furnace to the lathe.

The Joints Between the Hoops.

One of the most noticeable features connected with this work was the exceedingly small width of the spaces separating the abutting ends of the hoops. This proved that the ends had been truly faced on the lathe and that the last hoop had been properly seated, and that the cooling spray of water had been applied at the right place. A blunder at any one of these stages would have widened this space and injured the gun. We tried several of these joints, and in not one of them was it possible to insert a thin knife blade even a short distance.

Cost.

The guns manufactured at Watervliet cost as follows:

8-inch.....	\$15,646
10-inch.....	30,592
12-inch.....	47,227

As the 8 inch gun weighs 39,674 pounds, the 10 inch 82,664 pounds and the 12-inch 140,578 pounds, each gun of this type and size may be considered as costing about \$800 per ton.

Personnel.

The Watervliet Arsenal, as well as all other Government arsenals, is under the charge of the Ordnance Department, United States Army, Brig.-Gen. D. W. Flagler, stationed at Washington, being Chief of Ordnance. The commanding officer at the arsenal is Lieut.-Col. F. H. Parker, under whom the gun factory has been mostly built up to its present state of completion. He is assisted by the following officers:

Capt. C. C. Morrison, acting paymaster, storekeeper, quartermaster and commissary of subsistence of the post, and who acts as recorder of the Board of Ordnance and Fortification in Washington, of which General Schofield is president.

Capt. W. B. Gordon has at present immediate charge of the gun shops.

Capt. F. E. Hobbs has immediate charge of the projectile factory and of making the field gun carriages.

Lieut. D. A. Howard, until recently had charge of the field and siege gun work.

Lieut. William Peirce assists in the supervision at the gun shops and is adjutant at the post.

The above named officers have, in addition, to perform the various military duties incident to a military post.

Anthony Victorin, M.E., has been employed in designing, inspecting and setting up the machinery and in the construction and equipment of the main building.

WORLD'S FAIR NOTES.

Getting Ready for October.

House cleaning has begun at Jackson Park in anticipation of the dedication ceremonies; a very large force of men is employed on this work. The building of roads and paths is progressing rapidly, and walks and flower beds are being laid out on the terraces along the grand basin. The completion of the Manufactures Building, in which particular interest is just now centered, is in sight, and there is no doubt of its being in readiness for the ceremonies. The steel work of the roof will be completed within a week, and the carpenters and staffmakers are as close upon the iron workers as possible. The artists who are decorating the interior of the domes over the entrances are on the ground.

Work on the main building of Machinery Hall is progressing rapidly. The placing of the ornamental staff work has also begun, and the foundations for the boilers and engines in the power house are being placed. One Worthington pump of the capacity of 12,500,000 gallons is in place in the pump house.

The exterior of the Administration Building is practically completed with the exception of coloring and placing the groups of statuary. Artist Dodge is at work on the statues for the decoration of the outer dome. The figures in this work will be 30 feet high.

The exterior ornamental iron work of the dome of the Horticultural Building is being painted. This building and the Woman's Building were given a roof test last week by two fire engines. The deluge of water disclosed some leaks, which the roof contractors will repair at once. Actual work on the Transportation Building's annex will begin shortly. The roof of this annex constitutes a terminal for the elevated railroad. Building work has begun on two annexes for the Fine Arts Building. Contracts were let for the stock pavilion and excavations for the foundations were begun. Work will soon begin on the Photographic Building. The big dome of the Illinois State Building begins to loom up. The big plate-glass tanks in the aquaria of the Fisheries Building are nearly completed and some of the fish will be placed in them next month. Work has begun on the clam-bake restaurant, where the old original New England clam bake will be exhibited and eaten. As weather will permit, work is being pushed on the big pier. Little has been done in the construction work during the recent rough weather, but a large portion of the old breakwater has been torn out.

It is confidently expected that the music hall, casino and peristyle will be finished by October 15.

Designer-in-Chief Atwood has completed the design for the magnificent ornamental centerpiece for the floor of the Manufactures Building to mark the juncture between the space of exhibition assigned to France, England, Germany and the United States. This design will be submitted to the commissions of the three foreign countries for their approval. This decorative feature was proposed some months ago by Sir Henry Wood, secretary of the British Royal Commission, and in furtherance of

the idea Mr. Atwood has prepared the design.

Navigating the Lagoons and Canals.

Visitors to the World's Fair will be afforded the opportunity of a 3-mile ride through the canals and lagoons about the wooded island in Jackson Park on a fleet of electric launches.

The idea of substituting electric motive power for steam in the propulsion of these pleasure craft was advanced nearly two years ago by the landscape gardeners of the exposition, F. L. Olmsted & Co. Like many other features of the exposition, this fleet of electric boats will be a new departure. It is well known that throughout the entire world there are less than half a dozen electric launches. But the Exposition Company were willing to follow the suggestion of Mr. Olmsted, and as a result a contract has been awarded the Electric Launch and Navigation Company of New York for the construction of 50 boats 34 feet long with 6 feet breadth of beam, and 20 additional launches of a smaller size.

The first number is expected to make the 3-mile round-trip course from the grand basin at the south end of the park northward through the north canal and around the wooded island to the starting point in one hour. There will be 15 landings, so that passengers will be enabled to embark or disembark in the immediate vicinity of 13 of the great buildings. The scenery, or rather views, along the route will be the finest in the exposition grounds.

In addition to the main fleet there will be 20 small launches to be engaged by private parties by the hour. They will run in no particular direction, but be subject to the orders of those engaging them.

The large launches will carry from 25 to 30 passengers each. The motive power is generated by a storage battery of 62 cells of the Consolidated Electric Storage Company's type. The power is communicated through a 4-horse power motor of special design, capable of developing 12 electrical horse-power for spurting. The propeller is 18 inches in diameter, with 12-inch pitch. The launch is fitted up with electric incandescent lights.

The officers of the Electric Launch and Navigation Company are E. J. Moore of New York, acting president; Alfred Skitt of the same city, secretary and treasurer, and Gen. Charles H. Barney of New York, general manager.

To provide for transportation along the exterior waters of the park a concession has been granted to Meeker & Willard of Chicago. This company will build 20 steam launches, each 50 feet long. They will be equipped with triple-expansion compound engines, with keel condensers. Anthracite coal will be used, so that neither smoke nor steam will be emitted. The route for these boats will be from the south pond north to the south inlet, through it, and around the main pier, 2500 feet long, west again to the main basin, where a turn will be made, and then north along the lake shore to the north inlet as far west as the Fisheries Building, and then return south over the same course.

The Device for Securing Harmony.

The Council of Administration of the World's Fair met and organized Thursday morning by the election of H. N. Higinbotham, president, and A. W. Sawyer, assistant secretary.

Mr. Higinbotham is president of the Chicago Board of Directors. His additional elevation to the presidency of the council has been conceded for the reason that, as president of the directory, he represented the body which furnishes the money for conducting the fair. The council is composed of four members, Messrs. Higinbotham and Schwab of the directory,

and J. W. St. Clair and George V. Massey of the National Commission.

After electing a president the council immediately elected Mr. Sawyer assistant secretary. Mr. Sawyer has been secretary of the Committee on Grounds and Buildings since its formation over two years ago. He has handled the enormous business of the committee in a manner so satisfactory that not a single complaint has been made. His knowledge of exposition work will be extremely valuable to the council, since it has on it but one member, Mr. Schwab, who could be considered familiar with the construction work at Jackson Park.

The council which thus began its official existence was provided for by the National Commission and the local directory with a view of creating a joint body whose decision should be final in the settlement of any questions of difference which might arise in the administration of the fair by Director-General Davis and Minister of Works D. H. Burnham. The council is given further authority of an extensive character in the general direction of the exposition management. It is composed of what have been hitherto opposing elements. The representation is equal. No provision is made for a casting vote, and in case the members of the council should get into a squabble they would make their organization ridiculous, since they have been selected as an arbitration committee.

Exposition officials generally believe that the council will prove a success. They say that good men have been selected and that they should get along without dispute. Most feel confident that such a result will be attained. All admit, however, that the new board is an experiment.

One of the first things which Director-General Davis will bring to the attention of the council will be a request for an additional building to relieve the Manufactures Building of 400,000 square feet of space. He needs that much additional room in the big building. Twenty-two nations are asking for space in that department and cannot be accommodated. After all, it seems that although there are 40 acres of floor space in the Manufactures Building, there are but 12 acres available for exhibits. This, at least, is the way Colonel Davis figures it. Deductions are made, of course, for aisles, posts and openings in the gallery floor.

Michigan's Novel Exhibit.

The exhibit of material things at the World's Fair by Michigan will be supplemented by a varied assortment of photographs covering all sorts of subjects. President I. M. Weston of the State Commission has outlined plans for the camera to carry into execution, and the photographic display will be full of instruction and interest. It is proposed among other things to have the pictures of all State buildings, including the State University at Ann Arbor, the Normal School at Ypsilanti, the Agricultural College at Lansing and the Mining School at Houghton. Photographs will also be taken of the colleges. The principal churches in the State with portraits of leading divines, public school houses, &c., will form an interesting group. Portraits of all the Governors, of the United States Senators and Congressmen, and other prominent men in civil and military life, will form an interesting picture gallery of Michigan men for the World's Fair visitors to look at.

The industries of the State will be illustrated by photographs of mining, lumbering, farming, fishing and shipping scenes, of factories and various manufacturing plants. The summer resorts will be given a place in the album, and the prettiest

parks and breathing places in the State will not be left out. The resources of the State will be depicted by photographs of the 70 different kinds of timber trees, interior and exterior views of mines, of fishermen making a haul, of stone and marble quarries and of orchards and farms. The picturesque will be covered with a variety of photographs of land and water views, and the historic will show views of the forts at Mackinac and the Soo, of the ancient churches in Detroit, St. Ignace, Harbor Springs and other places, of the old State Capitol and the early log cabins which are still to be found in the back districts.

Another novel feature in the Michigan exhibit will be a bird's-eye view of the State, 14 feet square, showing every river and stream, every county, city and village in the State, the hills and valleys, the nature of the soil, the character of the timber and the various mineral deposits. The map will be drawn from an imaginary point about 2 miles above the city of Toledo, and the view obtained will cover Lakes Michigan, Huron and Superior, the Upper Peninsula and a portion of Wisconsin. The map will cost about \$1000, and will require six months of hard work to prepare. Similar maps on a smaller scale will be prepared of Grand Rapids, Detroit, Saginaw, Muskegon and other cities, but these will be paid for by the cities interested and not by the State.

The Design for the Souvenir Coin.

Decisive action has not yet been taken on the design for the souvenir coin. While the law in this matter states that the designs shall be approved by the Secretary of the Treasury and the Director of the Mint, yet these officials deemed it proper to have the proposed coins satisfactory to the managers of the big fair. Any suggestions made by the latter will be duly considered at the Treasury Department, and care will be taken to have the designs conform as much as possible to the wishes of those directly interested. Within six weeks after an approved design is submitted to the mint at Philadelphia pieces can be struck for distribution by the Sub-Treasurer at Chicago. Probably by May, 1893, at the latest, the entire issue of coins authorized by Congress can be in Chicago ready for use by the exposition management. Director Leech will push the work of making the coins as rapidly as possible after the designs are returned from Chicago. Meanwhile nothing has been done in the way of making another engraving for the obverse to take the place of the Lotto portrait of Columbus, which seems to be the only objectionable feature for the proposed coin. No one has thus far interposed even a remonstrance against making the reverse of the coin illustrate the beauties of the Government building at Jackson Park, and any further delay must be blamed on the local directors.

Views on Souvenir Coin Sales.

Government officials are watching closely the experiment of selling souvenir half-dollar coins for a dollar. Several applications have been received by the Director of the Mint, at Washington, from banks and other institutions, for the purchase of coins in lots from 1000 up to 5000. These have all been answered by the statement that the Treasury Department has no authority to sell any of the coins, as they must be delivered to the exposition. Most of those who have had experience with expositions doubt whether the directors will realize their hopes and secure \$5,000,000 from the \$2,500,000 appropriation. It is pointed out that 5,000,000 souvenirs is an immense number, and will satisfy an extensive demand at the ordinary value for commercial purposes. When it comes to

doubling that value they don't know how the public will take it.

The officials of the Census Office say there are about 12,500,000 families in the United States. The average is a trifle less than five persons to a family. It is noticeable that in the detailed analysis of race, nationality, conditions and so on, the larger families are those who will be the least likely to be able to visit the fair, or to possess themselves of any of its souvenirs. So it is questioned whether one-third of the families of the United States will really want a souvenir half-dollar coin at the expense of a dollar. The foreign demand could be subtracted from the 5,000,000 half dollars, and there would be enough of them to provide one for every third family in this country. During the debate in the Senate Mr. Sherman gave it as his opinion that 100,000 souvenir coins would supply the entire demand, but there was no one who agreed with him, though many Congressmen thought that 1,000,000 would be ample.

Senator Pettigrew, who is chairman of the Quadrocentennial Committee, takes a different view. Speaking of the matter a few days ago, he said: "I predict that the time will come when those souvenir half dollars will be worth \$3. In the first place, the demand from foreign countries will be much greater than has been supposed. A man told me the other day that he intended to buy 150 of them to send to European friends. I gave that as an illustration. Then our people at home will want lots of them. I think that everybody who goes to that fair will want a souvenir half dollar, and when you figure out the attendance, you can get pretty near the probable demand." Treasury officials do not take so sanguine a view.

To Get More Space.

Director-General Davis has received from his department chiefs an aggregate of the amount of space applied for by intending exhibitors. These applications foot up 6,664,000 square feet, or approximately 152 acres of space. All the departments have not been heard from. The Director-General has not as yet issued orders for the awards of space. The applications will be carefully considered. Some of them are for twice the amount available in the buildings in which application is made. The applications in the several departments are as follows: Agriculture, 618,000 square feet; viticulture, 382,000; mines, 608,000; machinery, 975,000; transportation, 890,000; manufactures, 1,775,000; electricity, 366,000; fine arts, 281,000; liberal arts, 704,000; ethnology, 64,000. Forestry, live stock and fisheries are not reported. When these are in there will be a still greater demand for space than is available.

Some relief is promised by the action of the Executive Committee on Friday. A resolution presented to it by the Committees on Manufactures and Ethnology asked that a special building be erected for the ethnological exhibit. The resolution was referred to the Council of Administration. The proposed structure would relieve the Manufactures Building of 160,000 square feet, which has been set apart for ethnology. Of this 160,000 square feet 120,000 would probably be distributed among foreign nations. Of these there are 22 which have been debarred from representation in the Manufactures Building through lack of room. The remaining 40,000 square feet would be devoted to domestic manufactures.

Two and a Half Acres for Trunks.

The Pennsylvania Railroad Company have made arrangements to provide themselves with 2½ acres of floor space for storing baggage during the World's Fair.

The company are extending their baggage depots at the Union Station, corner of Canal and Adams streets, 250 feet north and 250 feet south, the additions being three stories high. Besides this the company have rented the Armour warehouse, near Canal and Van Buren streets, thus increasing the capacity for trunks by 30,000 square feet. The company, all told, will have the following baggage space: One three-story building 275 x 25 feet, one six-story building 100 x 50 feet, two three-story buildings 245 x 25 feet, and two two-story buildings 250 x 30 feet, making the total of about 2½ acres of floor space.

The volume of baggage during the exposition will be exceedingly large, and it is expected that the demand for trunk room will be increased by the need of storage for people who make Chicago a headquarters for short excursions into various parts of the country and whose bulky luggage the hotels will be unable to care for during their absence from the city.

Miscellaneous.

George S. Morrison, the eminent engineer, has withdrawn his proposition to erect a tall tower on the exposition grounds. This ends the long series of negotiations for a lofty structure which it was intended should overtop in height the Eiffel tower at the Paris Exposition. The towers on the World's Fair grounds will average about 400 feet high. There will be two, not more than three of them, each of which will be of artistic design, and in harmony with the surrounding buildings.

The Austrian wood-carving industry will be specially represented at the Chicago Exhibition by thirty-four expert wood carvers from Vienna, who will exhibit their work in its various branches. Everything is being done to organize a thoroughly representative and interesting collection of exhibits.

Among recent applications for space in the railway division of the Transportation department is one from the Yale & Towne Mfg. Company of Stamford, Conn., for a 7-ton locomotive crane to be mounted on a platform standard gauge car 14½ feet long by 11 feet wide. It will occupy in operation a circular area of 46 feet in diameter.

In the main section of transportation exhibits Stewart & Binney of Boston will use about 400 square feet of wall and floor space for the display of models, photographs and paintings of yachts, fishing vessels and other vessels by that distinguished architect, the late Edward Burgess.

As bearing upon the relative value of steel and iron pipe, and the facility with which it can be worked by the consumer, we are informed by the Riverside Iron Works of Wheeling, W. Va., that they have entered orders during the current year for nearly 1,500,000 feet of 1-inch steel pipe from B. F. Sturtevant & Co. of Boston, who cut and thread more pipe than any single concern in the country outside of the pipe mills themselves. The Riverside Iron Works state that they do not find it necessary to make special concessions in competition with iron pipe.

There has been issued in pamphlet form a lecture delivered before the Franklin Institute by John M. Hartman, the well-known furnace engineer, of Philadelphia, entitled, "Notes on the Blast Furnace."

Ports on Puget Sound are growing in importance. A fleet of 91 loaded vessels sailed from Puget Sound and British Columbia ports last month with cargoes worth nearly \$900,000.

HIGH-PRESSURE HYDRAULIC PRESSES IN IRON WORKS.*

BY R. M. DAELN, DUESSELDORF, GERMANY.

(Concluded from page 330, August 25.)

Special Forms.

The field of application for the systems of producing water pressure increases with experience and with the improvements devised to overcome the difficulties encountered in practice. Consequently, local conditions are becoming more and more decisive in the choice of a suitable system.

The Pneumatic Accumulator.—The reasons for avoiding the use of the accumulator are partly removed by the patent pneumatic hydraulic accumulator of Prött and Sulhoff,* which successfully substitutes air pressure for a constant weight, so that, in rapid changes of the water speed, the effect of the momentum of a weight, increasing seriously the resultant shocks, is eliminated.

Fig. 8 shows one form of this accumulator. It consists essentially of an air cylinder, A, with plunger, *a*, and a water cylinder, B, with plunger, *b*, having, for instance, one-tenth the area of *a*. Hence, if the pressure in A be 50 atm., and water is forced through *e* into B so as to raise *a* and *b*, the pressure in B will be 500 atm. When water is forced into B, the air in A will be compressed; when water is taken out of B, the air in A will expand and drive the plunger down—but without shock, even if the speed be high. F F' are auxiliary air receivers, of which there may be any desired number (the large accumulator at Bochum has six), and which may be cut off or connected by valves, as at *f*, as required to increase the air space, and diminish proportionally the range of pressure in A, and the consequent intensity of the pneumatic reaction. The cast-steel plunger *a* is made hollow to give additional air space. The amount of air is constant, except for loss by leakage. To prevent this, a liquid (preferably oil) is introduced above *a* (as shown in the figure opposite the oil gauge *g*), and is allowed to penetrate also into the small annular space between the walls of the plunger *a* and a water-tight lining, *h*, of wrought-iron plate. The manufacturers say that without this protection the best steel casting would not be tight under an air pressure of more than 50 atm. Oil is introduced through *g* by means of the valves shown at the right of *l*, which leads to the air pump. The pump is engaged or disengaged by means of *m* and *n*. For further details, the description in *Stahl und Eisen*, cited above, may be consulted. The manufacturers, Breuer, Schumacher & Co. of Kalk, near Cologne, have printed an English translation, which they will doubtless furnish on application.

Applications of the Steam Intensifier.—In most recent times, improvements in the control of the hydraulic column (to be described below) have essentially facilitated the use of a central high-pressure generation, with or without fly wheel, so that this system can now be employed for the largest forging presses connected with iron and steel works, whereas it was formerly more or less confined to establishments having many departments, such as bridge shops, shipyards and boiler manufactories, in which the tools for adjusting, cutting, punching, bending and riveting wrought iron were operated by hydraulic pressure. The pressure, which formerly seldom exceeded 100 kg. per square centimeter is now carried considerably higher.

* Read at the Baltimore meeting of the American Institute of Mining Engineers.

* See *Stahl und Eisen*, 1891, No. 2, p. 132.

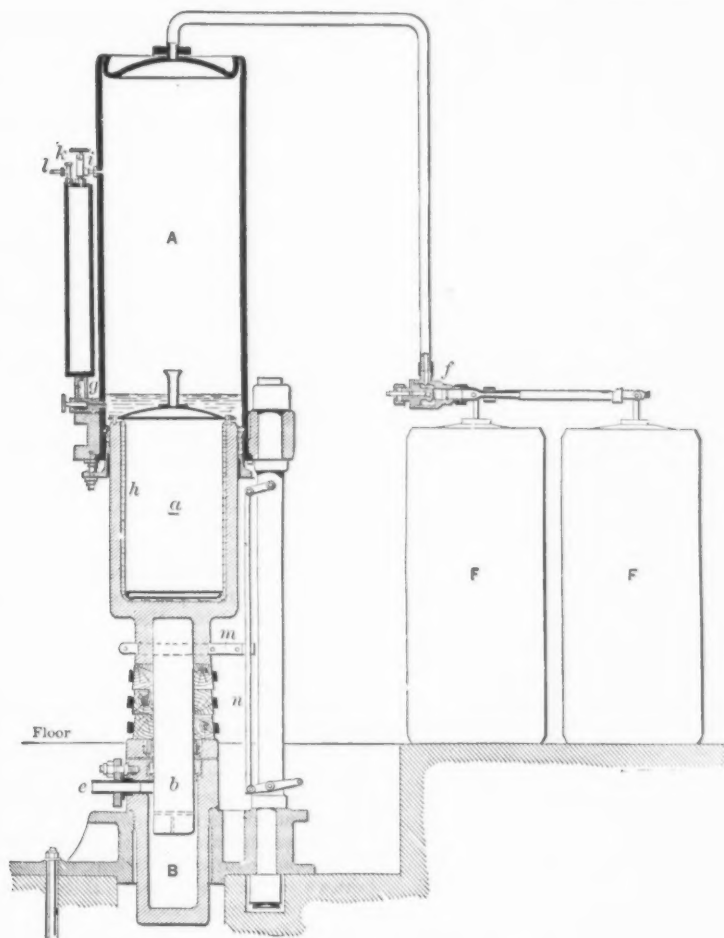
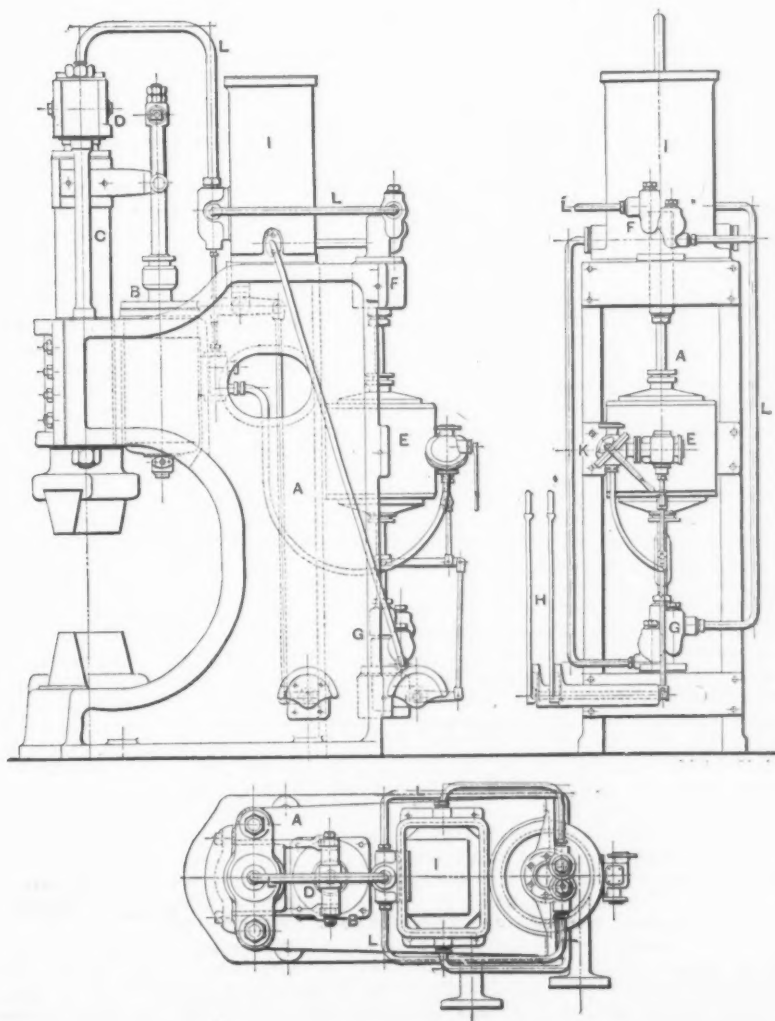


Fig. 8.—The Proett and Seelhoff Pneumatic Accumulator.



Figs. 9 to 11.—Forging Press of the Duisburg Company.

For the presses used in plate mills to bend, corrugate, cut and stamp the plates, the simple intensifier, shown in Fig. 3, has largely taken the place of the pump with accumulator, having already proved its excellence in other directions, as, for instance, in the operation of billet shears.

Fig. 1, already referred to as illustrating the general principle of the intensifier, represents also its application in the patent vertical hydraulic shearing machine, with direct steam driver, of Breuer, Schumacher & Co. This machine, designed for shearing hot steel ingots, consists essentially of the steam intensifier already described, from which the working cylinder D derives (through water or other liquid) the pressure, which is communicated through E to the blade F. A small steam cylinder, G, above the shear frame, lifts E, with the upper shear F, after the cut, to their initial position. On the cylinder A the steam valve b, operated by the hand lever a, directs the steam alternately into G and A.

When, by depressing the lever a, steam is admitted to the large cylinder A, the piston rises, and E, with the connected cross head m, are forced down by the pressure of the water forced by B operating in C. In this down stroke m, gliding upon the curved lever l, moves (in correspondence with the curve of l) the steam slide of b, so that after the cut has begun the steam is first throttled and afterward cut off from A entirely, leaving the remainder of the cut to be effected by expansion only. In other words, when the resistance of the bloom is highest the steam inlet of A is entirely open, and as resistance diminishes it is proportionally closed. Finally, when the cut is finished, m and l automatically reverse and open the outlet for the steam in A, the piston of which then returns by its own weight, being suitably cushioned by the control, through b, of the steam escape.

Many devices have been patented for applying to different purposes the principle of direct transformation, by means of the intensifier, of steam into water pressure. Among these may be mentioned the use of a counter plunger, to regulate the plunger speed by controlling the water discharge. In this way it has been found practicable to do away with the otherwise inevitable shock involved in the sudden stoppage due to resistance — as, for instance, in the forging of cold iron. If necessary to secure a very large number of strokes in a given time, several intensifiers can be made to operate one press.

The firm of Breuer, Schumacher & Co., already mentioned, having undertaken, at the writer's suggestion, the development of this principle of the intensifier, have adapted it in arrangement and construction to the various requirements of iron works, among which it has consequently found an extensive use. Fig. 1, as already observed, shows their vertical hot-shearing machine on this system. Horizontal hot-shearing, vertical cold-shearing, forging, stamping, flanging, bending presses, &c. (ranging from 80 to 2000 tons maximum hydraulic pressure), and vertical hydraulic sleeper presses for finishing steel railway, sleepers from the rolled section, are already included in the regular catalogue of this establishment and furnished to order. In the sleeper press the principle illustrated in Fig. 2 is applied.*

The Double-Action Pump.—The double-action pump, without fly wheel or accumulator, may be used, as already observed, in like manner as the intensifier; but additional valves in the hydraulic column will be required, and particularly such as are operated by the piston stroke and, therefore, involve for their closing more interruption of the current. Haswell's press, used in Austria 25 years ago, for forging steel and wrought iron, was provided with a pump

* See *Stahl und Eisen*, 1892, No. 4.

of this type, the defects of which were partly responsible for the long delay in the introduction of the system, though, doubtless, the main cause was that the press was too weak to treat steel ingots. With the guidance of later experience the double-acting steam pump can often be employed with advantage by reason of its small space requirement.

The forging press of the Duisburger Maschinenbau-Aktiengesellschaft, shown in Figs. 9, 10 and 11, is built on this system, to exert at a water pressure of 200 kg. per square centimeter a total pressure of 100 tons. It is in the form of a steam hammer with single G frame. This frame, A, carries the anvil below and above the steam cylinder B, the piston of which is connected by a double cross head, D, with the hollow press stamp C. The steam cylinder E, on the back of the frame, drives the two high-pressure pumps F and G, and is regulated by the levers H J on the top of the frame. The reservoir supplies the pumps and receives the spent water. The valve K distributes steam both to the lifting cylinder B and the driving cylinder E. L L are the hydraulic pipes connecting the pump and intensifier with the hollow press stamp.

The novelty of this construction consists in two features. The first is that the steam, after being used in the lifting cylinder, can be conducted into the space above the piston, partly to save steam, partly to equalize the pressure on the two sides of the piston, or, if desired (by the use of different areas of piston surface above and below), to effect an accelerated back stroke of the stamp. At the same time, the double-acting pressure pump is controlled by a differential lever in such a way that every position of this lever represents a definite position of the stamp. The second novel feature is that the press stamp C is protected against side strains by specially heavy guides. This press has been in operation at Duisburg for several months with perfect success.

The forging press on the Trappen plan, made by the Märkische Maschinenbau-Aktiengesellschaft, in Wetter, Ruhr,* is provided with a pump on this system, but separated from the press. It is in operation at the Skoda works, at Pilsen.

The Baare Press.—Forging presses for the treatment of steel ingots have come into general use only within the last four years, since the firm of Tannet & Walker of Leeds demonstrated by various applications on a large scale that such presses could be most advantageously substituted for heavy steam hammers. Following the example of several English works, most of the large manufacturers of forged steel have adopted presses. According to a report of the French engineer, F. Gautier, made in 1889, Krupp, in Essen, had already a press of 2000 tons pressure, replacing a 75-ton hammer, and had ordered a 4000-ton press. The same report enumerates 12 large presses, finished or under way, and shows that 1200 ton presses would replace 30-ton hammers, and 4000-ton presses 120-ton hammers.

The Bochumer Verein für Bergbau und Gusstahlfabrikation, in Westphalia, has advanced in the construction of forging presses, after making several of 1000-ton pressure, or less, to the production of a 4000-ton press. The details of this press, freely shown to me, confirm the statement made at the beginning of this paper, that, by a suitable arrangement of the valve action, the disadvantages of valves operating in the high-pressure water column can be done away with. As will appear from the description which follows, this object is essentially effected by connecting the valve cones with plungers operated with low-pressure water, by which plungers they are either fully opened or completely closed.

The speed of the working plunger of the press is then regulated by a special throttle valve in the high-pressure column.

The presses of the Bochum Company, built under the German patent of Fritz Baare (No. 45,323), are illustrated in Fig. 12. They are arranged for three separate working pressures, in the proportion 1 : 2 : 3. The diameter of the lower part of the press plunger is 930 mm.; of the upper part, 530 mm. Under a water pressure of 600 atm., the total pressure exerted would, therefore, be 4075 tons; or, after subtracting the counter pressure of the lifting cylinder, about 4000 tons. The lifting cylinders are connected with an accumulator of 50 atm. pressure, so that, after the escape valve is opened, the press plunger rises. The stroke of the latter is 1500 mm., which is sufficient for the largest forgings. Raising or lowering the upper part of the press, which has been found necessary sometimes with the presses built by Tannet & Walker, is not required under Baare's construction, since, even at

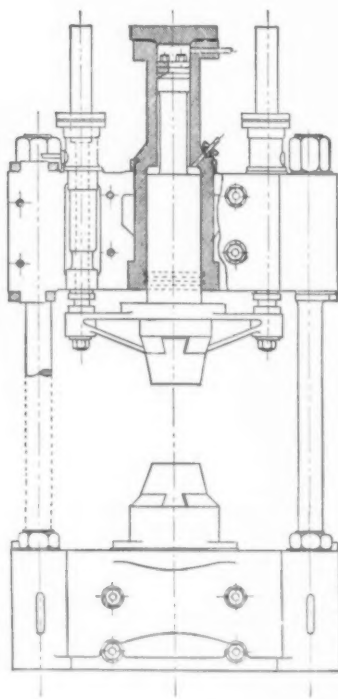


Fig. 12.—The Baare Press.

its lowest point, the plunger still has sufficient bearing in the cylinder. The hydraulic packing sleeves on the lower part of the plunger are rendered accessible by the easy removal of a stuffing box. The sleeves on the upper part of the plunger can likewise be changed speedily and without trouble after the cylinder head has been removed. There are two of these upper sleeves, one making a tight joint upward and the other downward. Since the cylinder head is heavy, a hydraulic crane is provided to lift it and move it to one side. The turning of the cross head which carries the upper die is prevented by the two lifting pistons, the downward prolongations of which have a diameter of 260 mm. The lower die can be easily replaced, for which purpose it is lifted by means of the lifting pistons till it will clear the floor, and is then drawn away sideways by one of the two forge cranes. The upper frame, which is made in two parts, of cast steel, weighs 64 tons. The press cylinder, also of cast steel, weighs, after finishing, 35 tons, and required 57 tons of steel for the casting. The valve action of the press (which is described in German patent No. 48,945) has the great advantage that, by means of a single lever, the press piston, with the smaller

pressure of 50 atm., is brought upon the mass to be forged, then subjected to the higher pressure, and finally raised again. The movement of the lever arm for these operations is only 600 mm., and the force required is about 5 kg., so that a small boy can operate it conveniently without fatigue. The movement of the valves by water pressure instead of by hand has the further advantage that they are not limited as to size or stroke, and thus the flow of water may be reduced to a comparatively small velocity, which favors the endurance of the valves. At the side of the main lever is a smaller lever, by means of which the area of the two inlet openings into the press cylinder is regulated. At the middle position of this lever both are open, so that the press exerts a maximum pressure. Moving the lever to the left shuts a valve in the pipe to the small cylinder, so that only the medium pressure is applied. Moving to the right similarly shuts off the lower cylinder and gives the minimum pressure. In this way the pressure can be instantly varied as required; and this feature, together with the use of lower pressure (50 atm.) water for supply during the forging effects a considerable saving of power, so that a duplex pump with steam cylinders of 760 mm. diameter and 920 mm. stroke is adequate to a 4000-ton press with 600 atm. water pressure. The accumulator for this press (Prött and Seelhoff's patent) has 225 mm. diameter and 3 m. stroke, and at its extreme upper positions automatically stops and starts the pump.

The arrangement of the press, with the cranes and furnaces belonging to it, is shown in the drawings.* It is similar to that of the large Bochum hammer forge, and has more recently been adopted by Terni also. The traveling cranes, which move around the press on a circular track 33 m. in diameter, have several advantages over those moving in parallel lines. In the use of the latter, the whole crane must be moved back and forward during the forging, while under the Bochum system only the light jib is so moved.

The position of the crane operator, a little above the floor level, is a very good feature, facilitating the comprehension of signals given to direct the movements of the cranes. The cranes are operated with water at 50 atm., and the loads are lifted and lowered with the greatest simplicity and certainty by direct-acting pistons, working in vertical cylinders which travel with the cranes. There are at present four furnaces and foundations for two more. The furnaces being grouped comparatively close to the press can be easily served by the cranes. The workmen are, nevertheless, not inconvenienced by the radiation of heat from the furnaces. The bloom is turned during forging by means of two roll tables, carrying movable chain drums, and operated by hydraulic power. These can be used also to draw the blooms from the furnaces.

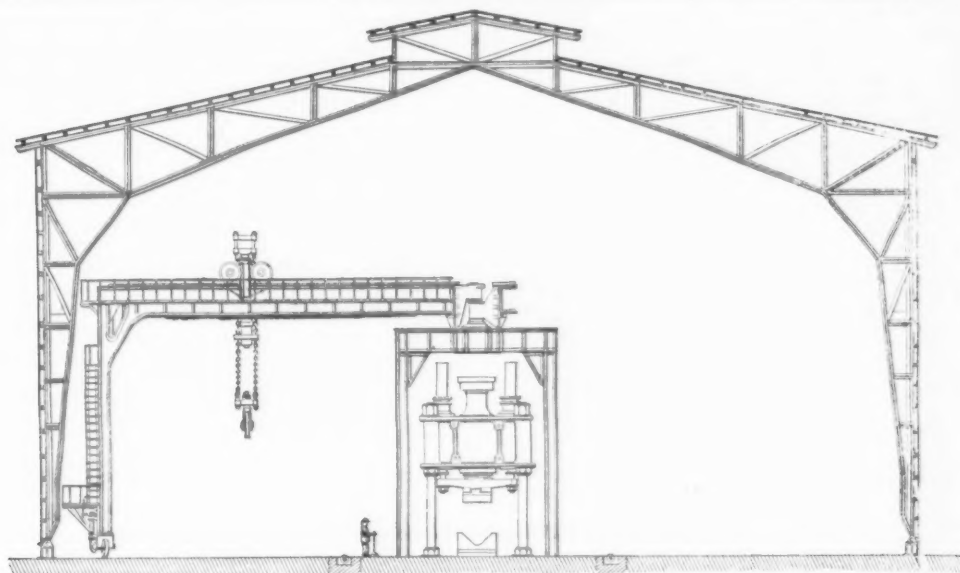
The water at 50 atm. required for the cranes and the press is furnished by a duplex pump with steam cylinders of 460 mm. diameter and 700 mm. stroke. The accompanying accumulator has a diameter of 450 mm., and a stroke of 3.5 m.

Finally, there are in reserve a second 600 atm. pump, a second 50 atm. pump, and a second pneumatic accumulator, guarding against any prolonged interruption of the work.

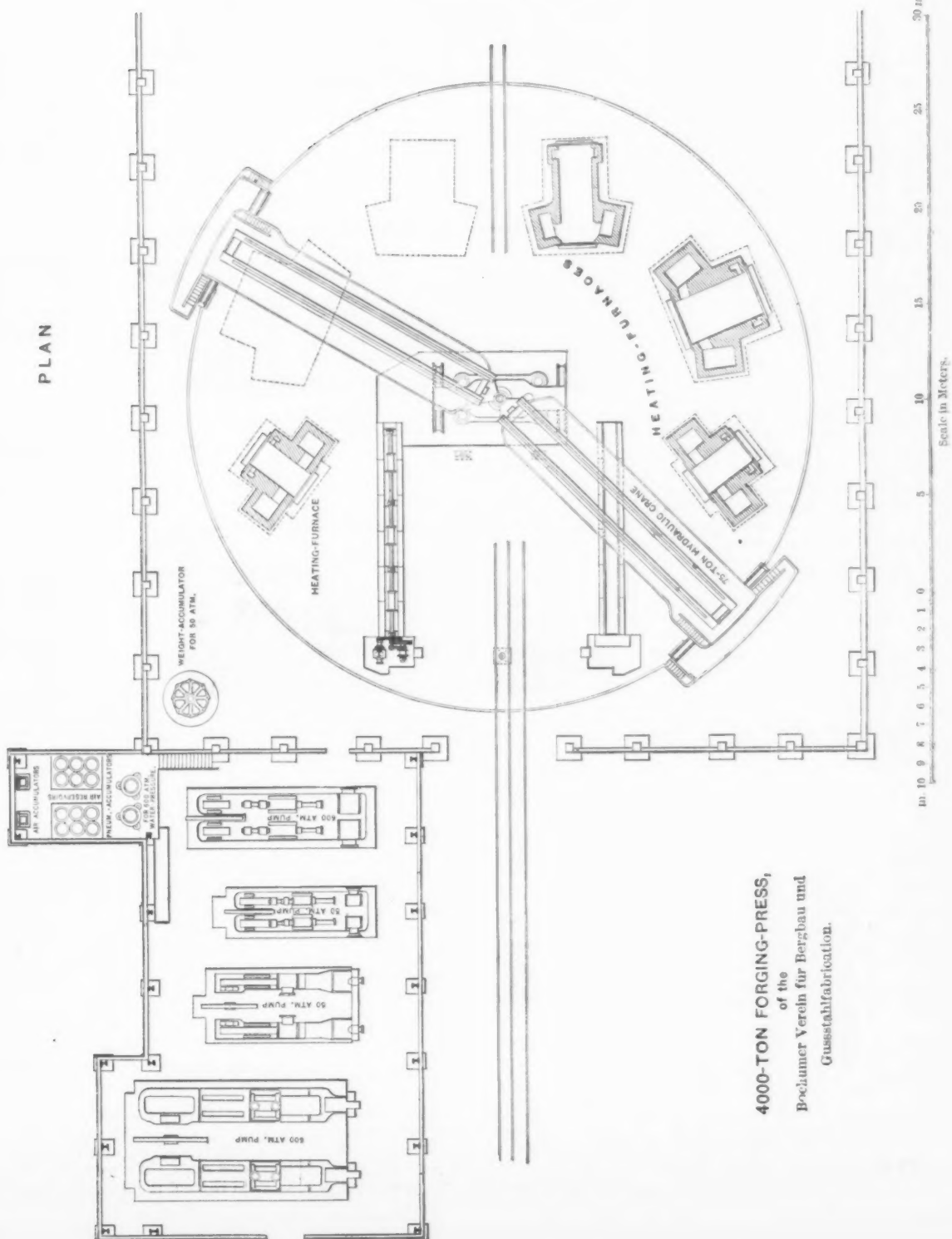
The valve action is designed to secure the easy and rapid movement, without shocks, of the valves controlling the hydraulic plunger. For this purpose each of them is connected with a plunger under lower water pressure, regulated through a slide valve by hand. Since in this way the opening of the press valves is always complete, the speed of the press must be

* See *Stahl und Eisen*, 1890, No. 8, p. 690.

* See also *Stahl und Eisen*, 1892, No. 3.



VERTICAL CROSS SECTION



4000-TON FORGING-PRESS,
of the
Bochumer Verein für Bergbau und
Gussstahlfabrikation.

otherwise regulated; and this is done by introducing into the pressure water column a non-weighted throttle slide, which, being likewise easily moved by hand, regulates, at the will of the operator, the speed of the water and of the plunger.

This valve action (covered by German Imperial patent No. 48,495), is shown in Figs. 13 to 21 inclusive. Fig. 13 is a diagram of the whole arrangement of the press, accumulators and connections; Figs. 14, 15 and 16 show the water pressure slide valve, *d*, in three positions; Fig. 17 is a vertical section, showing one form of the throttle slide valve *g*; Fig. 19 shows a form for the main press valves *a*, *b* and *c*; Fig. 20 is a section and Fig. 21 a plan, showing the manner in which valves *d* and *g* are operated together.

In Fig. 13, B and C are power accumulators, which feed the cylinder of the hydraulic press A. B contains low-pressure (50 atm.) water, which is used to fill the press cylinder and to start the plunger, while C serves to exert the final working pressure, and is therefore loaded higher (500 atm.). The press valves are at *a*, *b* and *c*. Through *b* enters the water at 50 atm., through *c* the water at 500 atm., and through *a* the water escapes from the press after use. The upward movement of the plunger is effected by means of an annular projecting flange (not clearly shown in the small-scale drawing, Fig. 13, though indicated by the cap shown in dotted lines above *a*), the space under which is kept in connection with one of the accumulators. Or, this upward stroke could be effected by a special lifting cylinder above the press, or by two such, one on each side. The valves *a*, *b* and *c* are not operated directly, but through the distributing slide valve *d*, which is moved by the lever *h*, Fig. 20, and which opens and shuts the supply valves with the aid of small low-pressure cylinders *m*, Fig. 19. These are connected with *a*, *b* and *c* by the pipes *u*, *v*, *w*, Fig. 13. The pressure water for operating the valves enters by the pipe *p* and escapes by *q*.

The distributing slide valve *d* contains two cups or shells disposed side by side, or one behind the other. There are three ports in the valve seats, each of which is connected with the space *m* over one of the auxiliary plungers of the press valves. For the control of the press, it is necessary that each of these valves may be opened at will, while the other two are closed. On the other hand, all three must be kept closed when the hydraulic plunger is to be held in one position. Now, each of these valves is closed so long as water under 50 atm. fills the space *m*, which is the case so long as the corresponding port in the distributing valve seat is not covered, and the 50 atm. water, entering at *p*, can consequently pass to *m*. On the other hand, either of the valves *a*, *b* and *c* will open whenever the 50 atm. pressure is removed from *m* by such a change in the position of the chambers of the distributing slide valve as puts the corresponding port in connection, not with the inlet *p*, but with the outlet *q*.

Figs. 14, 15 and 16 are diagrams illustrating the three principal positions of the distributing slide valve. In the first position, Fig. 14, the pipes *u* and *v*, communicating with the spaces *m* over the auxiliary plungers of valves *a* and *b*, are under pressure from *p*, and these valves are consequently closed, while pipe *w* is shut off from *p* and connected with *q*. There is consequently no pressure in the space *m* over the auxiliary plunger of valve *c*, and this valve is open. In the second position, Fig. 15, the pressure from *p* is similarly removed from valve *b* (the low-pressure water valve) and left upon *a* and *c*; while in the third position, Fig. 16, *b* and *c* being closed by the pressure from *p* in the space *m* above each, *a*, the back-stroke

valve is open, permitting the escape of the water from above the press piston, on its return stroke to the press. It is evident that at intermediate positions of the slide,

As will be seen in Fig. 19, the valves thus operated by water pressure at *m* move, in opening or closing, to the full extent of the stroke allowed them; that is, they

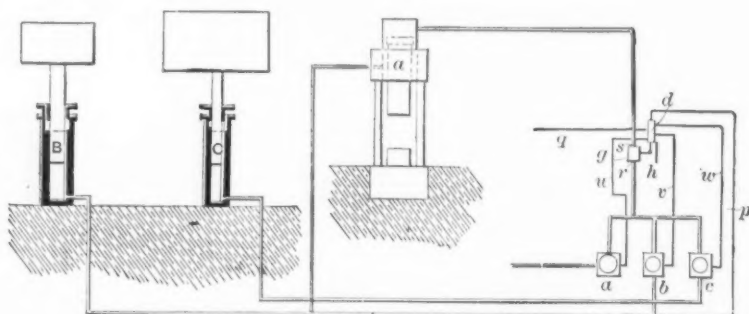


Fig. 13.—General Arrangement of Bochum Press, Accumulators and Connections.

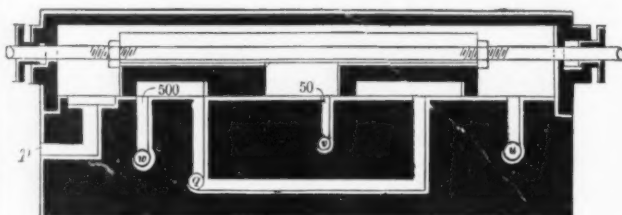


Fig. 14.

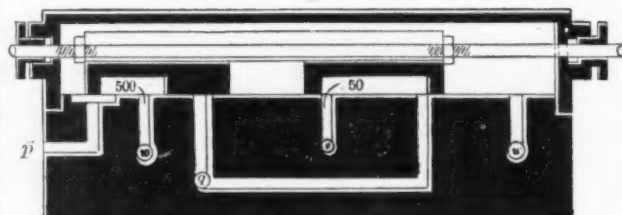


Fig. 15.

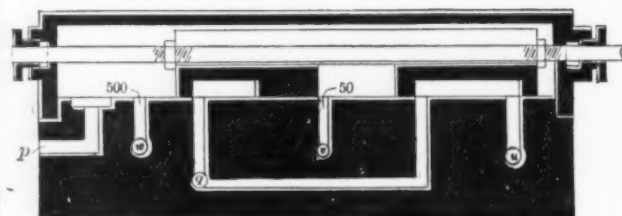


Fig. 16.

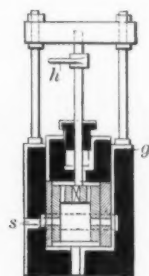


Fig. 17.



Fig. 18.



Fig. 19.

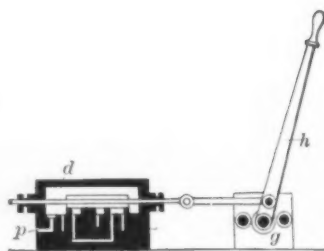


Fig. 20.

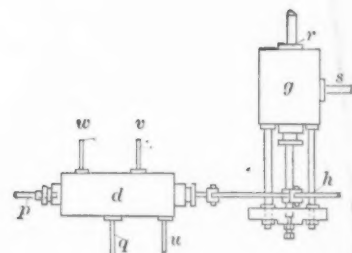


Fig. 21.

Figs. 14 to 21.—Details of Valves.

between the first and second or the second and third, all three of the plungers *m* will be under 50 atm. pressure from *p*, and all three valves, *a*, *b* and *c*, will be closed, preventing movement of the press plunger.

open or shut completely. It would be difficult to devise any simple arrangement by which the stroke of these valves could be varied during the operation of the press so as to control the flow of water. Hence,

against a constant resistance, the speed of the press plunger cannot be altered by means of this valve action. Yet it may be very desirable in practice to effect easily and at will such a change of speed; and this is completely effected by means of the balanced throttle valve *g*, Fig. 17, already mentioned. This is connected at *r* with the three valves *a*, *b* and *c*, and at *s* with the press, and thus constitutes a part of the pipe circuit, through which the pressure water enters the press and the spent water returns. The throttle valve *g* and the water-pressure slide valve *d* are both operated by the lever *h*, as shown in Figs. 20 and 21. The throttle valve is perfectly balanced and can therefore be easily moved. It operates in such a way that either at the instant when either of the valves *a*, *b* and *c* is opened, or imme-

The press of B. Walker of Hunslet, Leeds, designed to produce forgings of rectangular section, is a combination of two presses, one vertical and the other horizontal, and placed one close behind the other, so that the bloom can be easily moved on a suitable hydraulic carriage back and forward from one to the other. Each of these presses has one fixed die or anvil and a movable die or hammer, operated by three hydraulic plungers, either or all of which can be put under pressure.

In the 4000-ton forge press of Chatillon & Commentry, at Monluçon, in France (more particularly described by me in *Stahl und Eisen*, 1892, No. 2, p. 57), the side strains of the plunger are taken up, not by the supporting columns, but by two hydraulic plungers, moving in vertical cylinders set below the floor and between the

pressure exerted is from 10 to 30 kg. per square millimeter of the ingot section.*

The Hydraulic Press, Compared with the Hammer and the Rolls.

The mechanical effect of the hydraulic press upon the ingot metal is superior to that of the hammer, because it is exerted with absolute certainty upon the whole mass beneath the die; since, if the pressure is not sufficient to overcome the resistance of every part of this mass, the plunger must stop.

It is generally reckoned that the press will turn out for equal time and equal steam consumption twice the weight of forgings that can be made by the hammer—the explanation of the difference being that part of the blow of the hammer is wasted on the foundation, while the whole effect of the press is utilized in the bloom.

Whether hydraulic presses can be successfully substituted for rolls is still undetermined. A press which I saw in operation two years ago at the Clarence Works, Middlesborough, England, seemed to bear the comparison favorably. With a pressure of 1200 tons it turned out per shift 50 to 60 tons of rectangular blooms and slabs. Later improvements have increased the product to probably 80 tons, which would about represent the proportion of its first cost; since the rolls, costing three times as much, would produce about three times as much. On the other hand, the press has the advantage that it can make, without replacement of its parts, any desired rectangular section, while the number of sections possible to a pair of rolls is limited—a point of importance in the production of slabs for plate. So far, however, as concerns the ordinary nearly square bloom mostly required in rolling mills, the blooming rolls are likely, for a long time to come, to retain the advantage in economy of steam and cost of labor. Special arrangements of hydraulic presses, to replace blooming rolls, are shown in the designs of Charles Davy of Sheffield and B. Walker of Leeds. (*Stahl und Eisen*, 1890, No. 6, and 1891, No. 3).

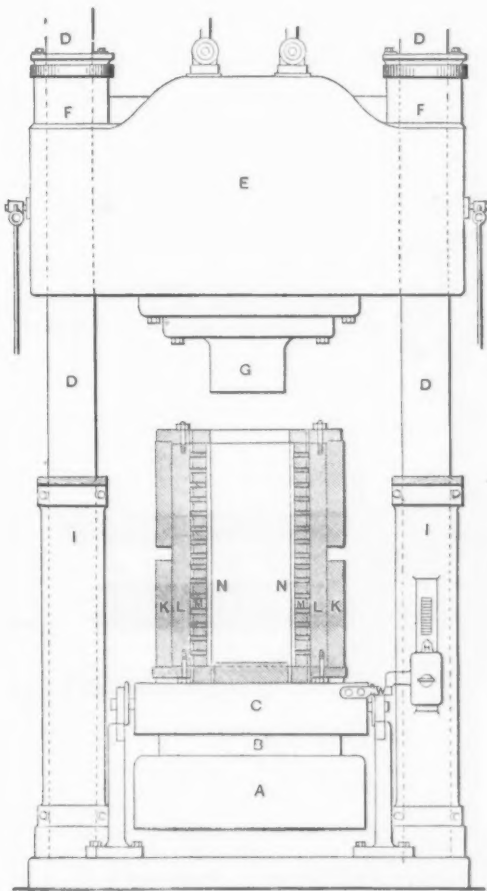


Fig. 22.—The Whitworth Press.

diately afterward, the connection with the press is gradually made. It is thus possible to cause the press plunger to descend (whether under 50 or 500 atm.) or to rise rapidly or slowly, as may be desired. The whole arrangement described above is specially designed to require a minimum expenditure of force at the lever *h*, in order to secure corresponding certainty and accuracy in the control of the movement of the press plunger. The object has been successfully attained, since the water pressure slide valve *d* can be reduced to small dimensions, and the work of moving the balanced throttle valve is slight.

Other Designs.—In order to obviate the swaying sidewise of the frames of vertical hydraulic presses at every side pressure of the plunger, I have proposed (*Stahl und Eisen*, 1889, No. 12, p. 1044) oblique instead of vertical pillars. In this case the upper girder is dispensed with, since the tie bolts take direct hold on the cylinder head.

F. W. Walker's vertical press (*Stahl und Eisen*, 1891, No. 11, p. 933), based upon similar principles, was patented in England in September, 1890.

press columns, at the two opposite ends of the frame. These plungers carry a moving cross head, and thus lift the working plunger on its return stroke. The relief of the frame columns from side strains will be secured by this arrangement if the side plungers and connecting parts are made sufficiently strong. The objection to it is, that it takes up room between the columns and requires that the latter shall be therefore set further apart, increasing the size of the frame.

A press of distinct importance for steel works is that of Whitworth of Manchester, Fig. 22, designed for the compression of steel in the ingot mold, which I saw at the works of the Bethlehem Iron Company, Pennsylvania. *A* is the press cylinder, *B* the hydraulic plunger, *C* the wagon on which the ingot mold is brought under the press, *D* are four hollow columns, connecting *A* with the movable cross head *E*, which is lifted by hydraulic plungers, and is held to the columns *D* by the rings *F*. The plunger *G* closes the ingot mold when the pressure is applied from below to the liquid steel. According to Professor Howe of Boston, the

The Trouble in Tennessee.—The officials of the State of Tennessee are making vigorous efforts to bring the rioters, and especially the leaders, in the recent trouble to justice. Already about 400 of the miners have been arrested, among whom are a number of the recognized leaders of the movement. One of the leaders was captured by a party of citizens and threatened with lynching, but was finally let off with the solemn promise that he would assist the officials in apprehending the rioters, and many who would otherwise have escaped have been captured by his assistance. State Labor Commissioner Ford has also been arrested charged with aiding the miners in their revolt, and strong testimony has been furnished to sustain the charge. After a preliminary trial he was admitted to bail in the sum of \$10,000. The decided action of the officials in bringing these criminals to justice is highly commended, and if such a course had been pursued at the first breaking out of the trouble a year ago, it is more than probable that the recent disturbance would not have occurred. Everything is now quiet in the Tennessee mining region, and it is stated that the convicts will be returned as soon as the stockades are rebuilt, plans for which are now being considered.

The Canadian Government will probably adopt the policy of free canals.

* The pressure on the steel is gradually increased, usually until it reaches 6 tons, occasionally till it reaches 20 tons per square inch of the horizontal section of the ingot.—*Metalurgy of Steel*, p. 156.

Danger in the Grindstone.

It would be difficult to imagine a more harmless looking piece of mechanism than the ordinary shop grindstone, used for tool and miscellaneous grinding. Revolving as it does at a very moderate speed, and being free from any complication of parts in motion, there is no suggestion of the aggressively dangerous character which it possesses under certain not unusual conditions. Its proverbial propensity for "bursting" does not exist except at a high rotative speed, from which the centrifugal force is greater than the cohesive strength of the material, provided, of course, that the stone is not a defective one. As, however, a bursting speed would not be suitable for tool grinding, on account of the danger of burning the tool, the stone may be considered as perfectly safe in this respect. The element of danger referred to consists in having a rigidly fastened rest for supporting the work while grinding, a practice by no means uncommon, even in well regulated shops, and many a lost or maimed hand may be charged to its use.

In grinding lathe and planer tools, drills, chisels, &c., if it be properly done, the hands are unavoidably held close to the face of the stone. As it is very unusual to find a stone of perfectly uniform texture throughout, the softest parts will, naturally, wear more rapidly than the harder, and as a consequence the face is more or less out of true most of the time. Also, there are local defects, such as small holes, hard flinty spots and streaks. As a consequence of this uneven surface, it is very difficult to keep a hardened tool in contact with it, under sufficiently uniform pressure to insure good work, without more or less danger of its turning slightly in the hands and digging into the stone. This is always liable to happen, even with the most careful and skillful workman, and the majority are not, to say the least, careful. The result of this mishap is dangerous or harmless, according to the kind of rest with which the grindstone is furnished. If it be a fixed one, bolted firmly to the frame, the tool will bring up against it, and can only free itself by gouging a hole or groove in the stone. This, of course, takes considerable force, and if, as is usually the case, the workman's hands are between the tool and the rest, they must sustain the full pressure, unless withdrawn very quickly.

As the mishap and its effect take but an instant of time, there is very little chance to consider—the result is known very speedily. But while a pinch of this kind may be painful, it is not often very serious. The greatest danger from a fixed rest is in its not being kept in close adjustment to the face of the stone. After the latter is trued up and the rest set so as to just barely clear the stone, it is not often readjusted until the space, as increased by the wear from use, is so great as to become inconvenient. If, for instance, there should be a gap of about $\frac{1}{2}$ inch, and the tool catch as described, the usual result would be that the tool would be carried down and jammed fast—either stopping the stone by throwing the belt, or splitting a piece out of the stone, possibly destroying it entirely. But the most serious danger would be to the hands of the workman, which might also be drawn into the narrow space, with the result of being mangled and perhaps permanently maimed.

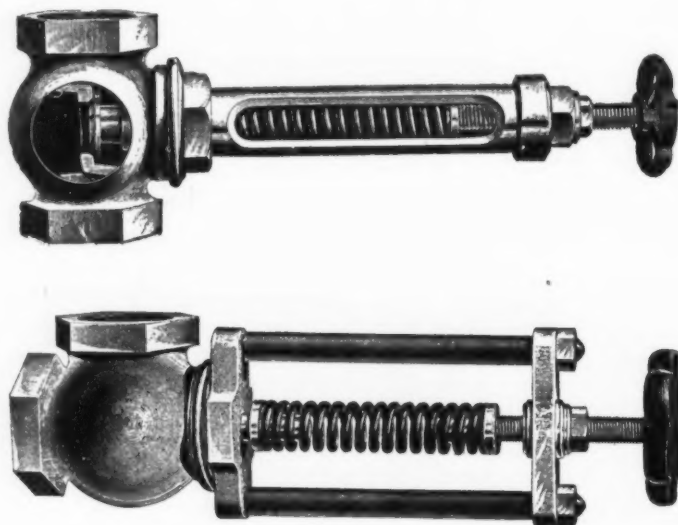
Usually an accident of this kind is attributed to carelessness—which it undoubtedly is, but far more on the part of the shop management which permitted the use of so unnecessarily dangerous a contrivance than that of the unfortunate victim. The use of this rest is the less excusable as it does not even possess the merit of being

better, in any respect, than one which would be perfectly safe. There is nothing better for a rest for hand grinding than a simple piece of 3 x 4 inch scantling laid across the frame, without fastening of any kind whatever. If a tool catches, the worst that can happen may be some skin ground from the workman's knuckles—there is no mangling. Of course reference is made to the proper method of using the stone—that is, grinding on the side running down, so that the stone runs toward the work, and not from it, as it would on the opposite side.

Relief Valves.

The McNab & Harlin Mfg. Company of New York have just placed on the market their new pattern relief valve, which is intended more particularly to relieve the back pressure on water mains, but can be used in any case where immediate relief from sudden pressure is required, as, for instance, on elevators that are run with water and derive their supply direct from

treasurer and manager. Under their management, they claim, the business of the concern became very profitable. They further assert that John L. Lewis then desired to get rid of the plaintiffs and get control of the concern. To do this he placed small shares with the various members of his family, and to admit them as members voted the stock of W. A. Richards, deceased, for whom he was executor. The plaintiffs were then put out of office. The charge is made that the voting of the Richards stock was illegal, and they state further that J. L. Lewis as head of the concern has not attended to the business, but by long absences has neglected it and the plaintiffs conducted it. They further state that the articles of association are defective and their interests endangered, and they ask that the partnership be dissolved, a receiver appointed to take possession and administer and account for all property and assets and make a distribution; also to declare the election of Lewis' family as members of the concern illegal. They have offered John L. Lewis \$150,000 for the interest held by himself and his family, but he has refused it, though the



THE McNAB & HARLIN RELIEF VALVE.

the main; also to relieve large engine cylinders from pressure caused by condensed steam; and again, to relieve an engine from back pressure where heating is done with exhaust steam.

As the engravings clearly show the construction no description of details is necessary.

The Lewis Foundry & Machine Company.

In the courts of Pittsburgh last week application for a receiver for the Lewis Foundry & Machine Company of that city was made by Isaac W. Frank and Edward Kneeland, formerly officers of that concern. The suit was brought against the Lewis Foundry & Machine Company, Limited, John L. Lewis, John Davies, Mrs. Annie C. Lewis, Mrs. M. A. Lewis Marshall, Annie C. Lewis, W. A. Herron, Miss Bella D. Herron, the executors of W. A. Richards, deceased, Thomas R. Richards and Mrs. Mary Richards. In the bill filed by the plaintiffs it is stated that the Lewis Foundry and Machine Company are a limited partnership association, and were organized with a capital of \$37,000. John L. Lewis was one of the largest stockholders, and at his solicitation the plaintiffs bought stock and Isaac W. Frank became secretary and Edward Kneeland

amount is in excess of the credit on the books.

In answer to these allegations one of the attorneys for the defendants has made the following statement:

The only chance for success that the plaintiffs have is on a technical irregularity. When the company was formed J. L. Lewis contributed \$12,500 in this way: He gave property worth about \$49,000 with the agreement that the company should pay his debts, amounting to about \$36,000. To pay the debts W. J. Lewis contributed some \$8500 and other members of the company about \$4000. Six months after the formation of the company the plaintiffs became members, and they must have known of the technical error in its formation. The assertions that Mr. Lewis neglected the business we deny. The results of the business speak as to that. The allegation that he voted stock illegally is also denied. It was voted in strict accordance with the law.

The business has been a profitable one. The company has a surplus of \$214,000 above its capital stock. In the past year alone two dividends aggregating \$55,000 were declared. Mr. Lewis was the practical man in the concern and gave it standing. Mr. Frank was not re-elected on the Board of Directors, but still held his position as mechanical engineer and draftsman for the company. Mr. Kneeland was not forced out of the company, but voluntarily withdrew. Even if the court decides in favor of the plaintiffs on the technical point, it does not necessarily follow that a receiver should be appointed. Receivers are appointed for insolvent concerns and this company is anything but insolvent.

As yet no decision in the matter has been reached.

Machine for Punching Flanged Heads.

This machine is the invention of H. C. Jones of the Hilles & Jones Company of Wilmington, Del., by whom it has been used most successfully. It is intended particularly for punching holes in the flanges of boilers, tanks and metal drums,

to relieve it from the plate as it is withdrawn. This arm can be adjusted to different thicknesses of plate.

Projecting from the face of the frame is a bed, B, formed, preferably, of a casting, as shown in Fig. 2. The bed is secured to the frame A by bolts, having heads adapted to vertical T-ways, e^1 , in the frame, so that the bed can be raised or lowered to accommodate different forms of plates.

Mounted in the carriage is a vertical spindle, G, having at its upper end a disk, g , upon which the plate to be punched rests. At the opposite end of this shaft is secured a worm wheel, g^1 , meshing with a worm, h , which slides upon but turns with a feed shaft, H. The worm is confined between two bearings on the carriage E, which support the outer end of the shaft H, so that the carriage can travel toward

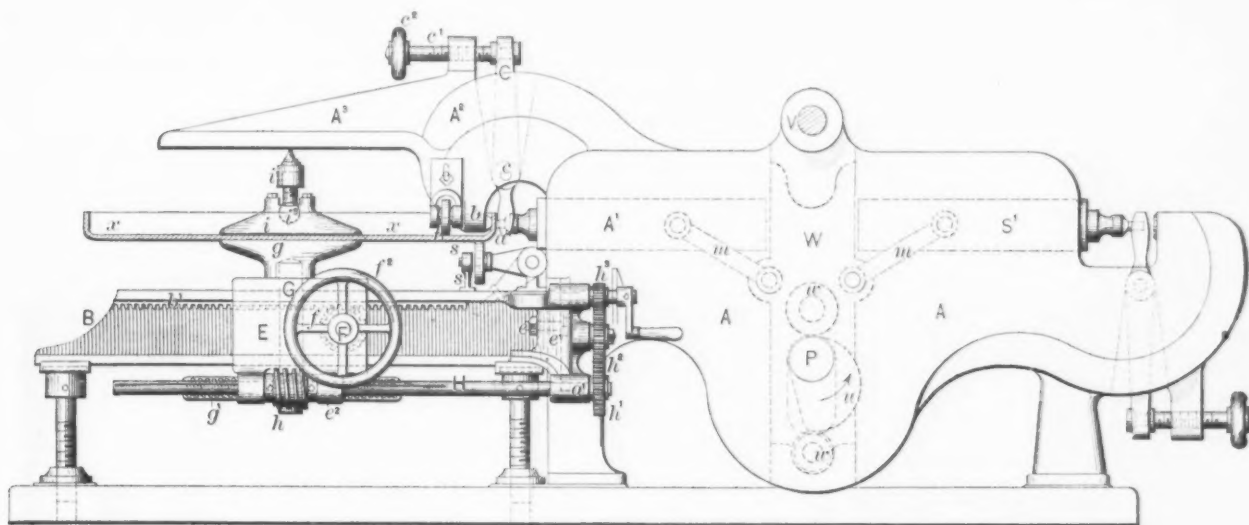


Fig. 1.—Side Elevation.

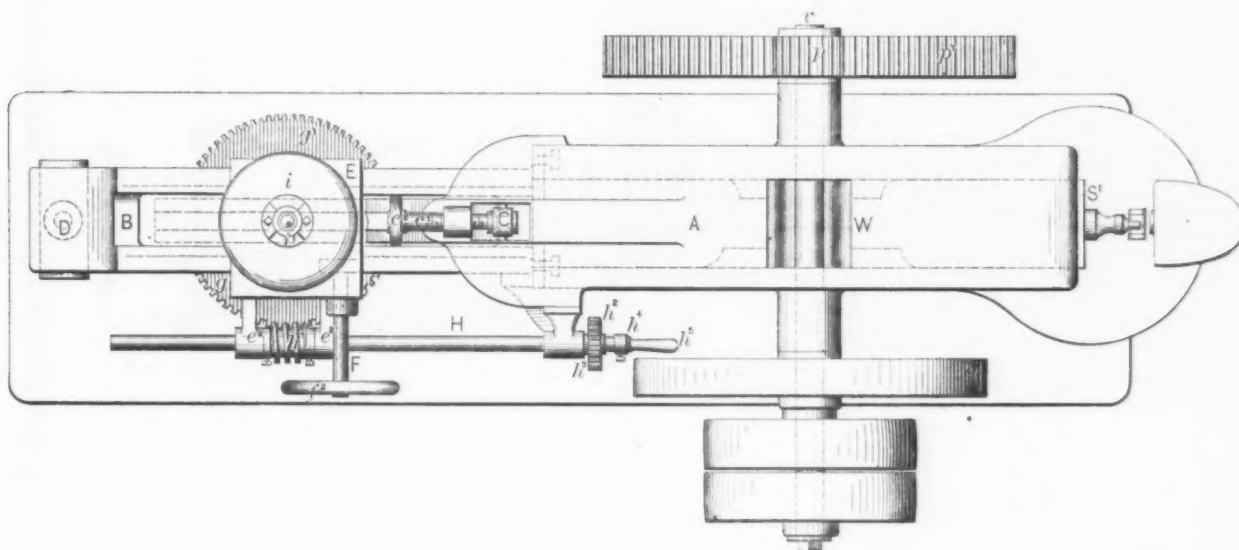


Fig. 2.—Plan.

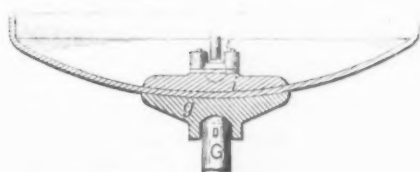


Fig. 3.—Method of Clamping a Dished Flanged Lead.

MACHINE FOR PUNCHING FLANGED PLATES.

the object being not only to punch the holes rapidly, but also to properly space them.

Shown at A is the frame of an ordinary punching machine having a reciprocating punch carrier, A¹, a being the punch. The bracket A² is arched over the space to receive the flange to be punched, this bracket carrying the die b, into which the punch is projected. The adjustable strip-per C passes around the punch and serves

The bed is supported by screw-jacks, on turning the screws of which the bed can be raised or lowered.

Sliding on the bed B is a carriage, E, and adapted to bearings in this carriage is a shaft, F, having a pinion, f^1 , which meshes with a rack, b^1 , on the bed B. The shaft F has a hand wheel, f^2 , by which it is turned, so as to move the carriage toward and from the punch to accommodate plates of different diameters.

and from the punch, but will always be in gear with the feed shaft. The shaft is provided with suitable gearing, which can be changed so as to give more or less feed to the shaft and consequently more or less movement to the vertical spindle G, carrying the plate to the punch.

The flanged plate x is placed in position on the disk g and a clamp disk is placed upon it, as shown in Fig. 1. This disk carries the center post i , which rests against the under side of the extension A² of the bracket A¹. The center post is coupled to the disk by a ball-and-socket joint, i^1 , and is made of two parts, one screwing upon the other, so that it can be adjusted to accommodate different thicknesses and shapes of plates. The object of the ball-and-socket joint is to allow the plate to turn in the event of the clamping disk being arranged out of line with the shaft G. In Fig. 3 the faces of the two disks are shown curved to correspond with the curve of the plate to be punched. The friction wheel s is provided in order

to hold large plates in proper alignment with the punch.

In operating the machine the diameter of the plate is first ascertained and the carriage moved the proper distance from the punch. The flanged plate is then secured in position between the two disks, and the proper gearing is placed between the shaft *A* and the feed shaft, so that one turn of the handle will feed the disk the proper distance on its axis. If, for instance, the holes are to be punched 2 inches apart, gearing is introduced by which the plate at the flange is moved 2 inches with one

The Venn Hydraulic Elevator.

The Venn hydraulic elevator belongs to that class which employ what is known as the "circulating system"—that is to say, those elevators in which during the descent of the car the water circulates from one side of the motor piston to the other. In elevators of this class the water is admitted to one end of the cylinder, which, for convenience, we will call the "induction end," to act upon the piston and raise the car, and when the car is to descend the

The object aimed at by the designer, I. H. Venn of Yonkers, N. Y., of the hydraulic elevator, of which drawings are here presented, was to provide means by which when the car is ascending with no load, or less than the maximum load, the surplus power developed by the water acting upon the induction side of the piston will be utilized to cause the circulation of a part of the water contained in the induction end of the cylinder from that end to the induction end, thereby causing the amount of water consumed at each ascent of the car to conform approximately to the

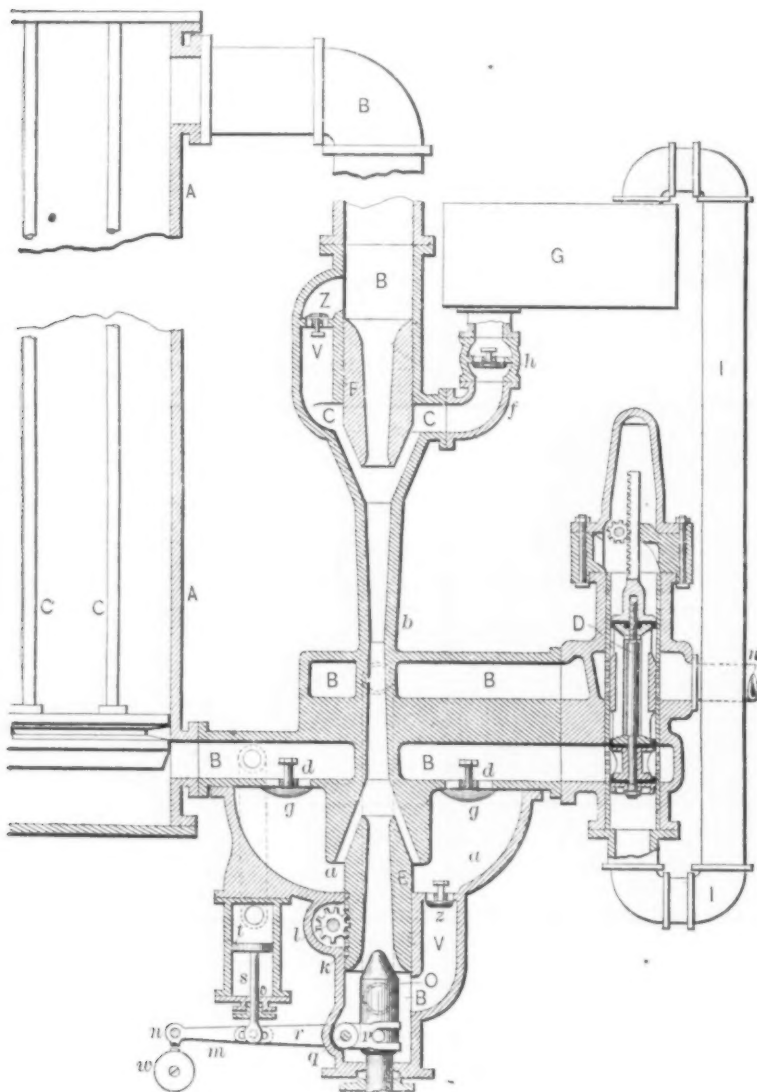


Fig. 1.—Sectional Elevation of Motor Cylinder, Valve and Circulating Pipe.

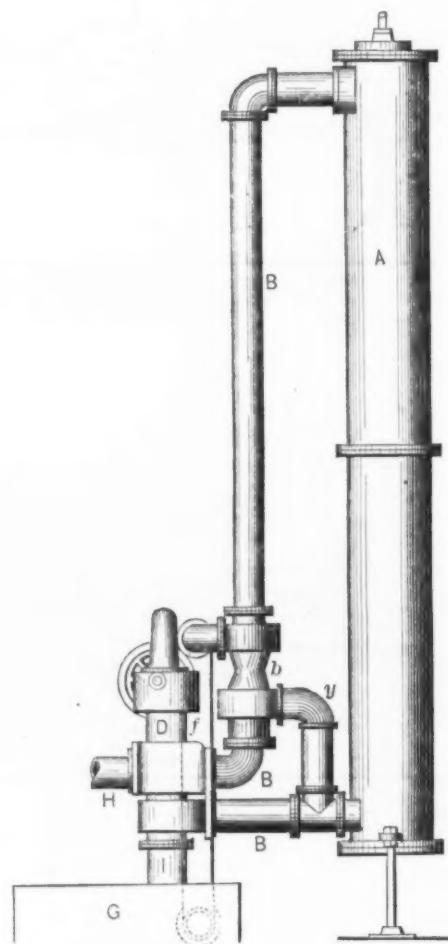


Fig. 2.—Elevation Showing Arrangement Slightly Modified.

THE VENN HYDRAULIC ELEVATOR.

turn of the shaft *A*. Consequently between each reciprocation of the punch plunger the plate will be moved 2 inches and the holes will be punched 2 inches apart. The supporting roller *s* and its bearing can be dropped, as shown by dotted lines in Fig. 1, during the time a plate is being mounted upon or removed from the machine. The construction and operation of the punching machine proper will be understood from the drawing.

Independent coal dealers in competition with the Reading combine are having a hard scramble on account of the difficulty in securing transportation by railroad, so that, although vessel rates to the East are at the lowest point, only a few are able to obtain cargoes. Moreover, the Reading naturally favors the Poughkeepsie Bridge.

water is allowed to circulate to the other, or "eduction end" of the cylinder, thereby permitting the car to descend by its own weight. By this system the water always acts at full pressure upon the motor piston during the ascent of the car. If the car is carrying its maximum load, the full pressure of water is required and no waste of power results. If, however, the car is empty or carries but a light load, the full water pressure is not required to raise the car, and as a consequence the piston is driven against the water in the eduction end of the cylinder and exerts a pressure tending to force the water out, which force is entirely wasted as it performs no useful function. From this it will be seen that the same amount of water is required and the same power expended at each ascent of the car, irrespective of the load carried.

load, and thus economize in the consumption of water. When the car is descending the weight of the car and its load move the piston, and cause the water to circulate from the induction to the eduction end of the cylinder. When the load is light the pressure tending to force the water out of the induction end of the cylinder is comparatively small, but when the load upon the descending car is heavy the piston is moved along the cylinder with such power as to expel the water from the cylinder with considerable force. Another object was to provide means by which the surplus power developed by the descending car and its load would be stored up and subsequently utilized in raising the car and its load.

Referring to the drawings, A represents the motor cylinder and B the circulating pipe of a hydraulic elevator. The cylinder

is provided with the usual piston, the rods C of which are connected with the hoisting cable in the usual way. The circulating pipe B is provided with a valve, D, which controls the induction of the water to the upper end of the cylinder, its circulation to the lower end, and its final discharge in the usual manner. The water for operating the elevator is supplied from a supply pipe, H, which in the case shown communicates with the chest of the valve D, and thence through the circulating pipe B with the induction end of the cylinder A, so that a part of the circulating pipe becomes, also, a part of the supply pipe.

The supply and circulating pipe B is provided with two reversely arranged nozzles, E F, through the former of which the water must pass in entering the induction end of the cylinder and through the latter of which it must pass in circulating to the eduction end of the cylinder. The portion *b* of the pipe between the nozzles is reversely tapered, so as to co-operate with the nozzles to form injectors of the ordinary form. At the points occupied by the nozzles the pipe is enlarged, so as to form chambers, *a c*, around the respective nozzles. In the organization shown in Fig. 1 the chamber *a* communicates through one or more openings, *d*, with the circulating-pipe B between the valve D and the eduction end of the cylinder. The chamber *c* communicates by a pipe, *f*, with a tank, G, into which the waste water is discharged through a pipe, I, or the pipe *f* may com-

The operation of the device, as far as described is as follows:

When it is desired to cause the car to ascend, the valve D is moved into position to open communication from the eduction end of the cylinder to the waste pipe I, and also (if the valve controls the supply pipe, as is shown in this case) open communication through the supply pipe to allow the water to enter the induction end of the cylinder. Water will then pass from the pipe H through the valve chest and enter the pipe B, and passing upward through the nozzle E enter the induction end of the cylinder and drive the piston downward, so as to raise the car, the water contained in the eduction end of the cyl-

the ordinary injector, which will cause more or less of the water from the chamber *a* to enter the pipe B around the nozzle and be carried into the induction end of the cylinder. By this means a portion of the water in the eduction end of the cylinder is circulated back and restored to the induction end of the cylinder, thereby economizing in the consumption of water and proportionately reducing the expense of operating the elevator.

When it is desired to cause the car to descend, the valve D is shifted so as to open communication through the pipe B between the induction and eduction ends of the cylinder. Both ends of the cylinder will then be in communication with the

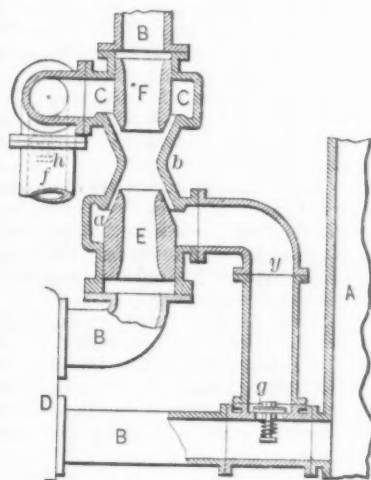


Fig. 3.—Enlarged Vertical Section of Fig. 2.

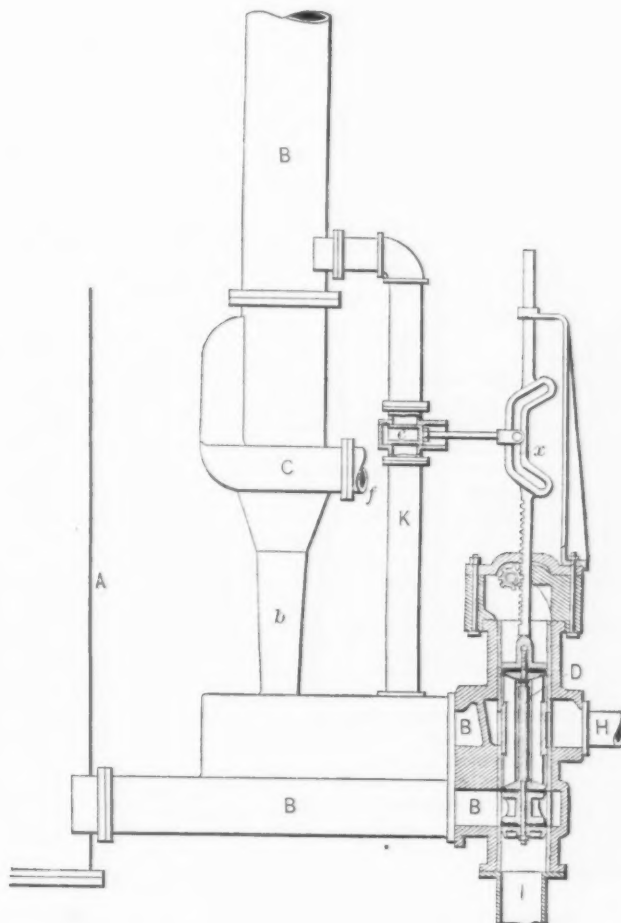


Fig. 4.—Sectional Elevation of Modified Construction.

THE VENN HYDRAULIC ELEVATOR.

municate with any other convenient source of water supply. The tank G is of course provided with a suitable overflow pipe, by which the surplus waste water can escape. The nozzle E is located slightly below the portion of the pipe B which connects the eduction end of the cylinder and the chest of the valve D, and the tank G is located slightly above the level of the nozzle F. By this means water enters the chambers *a c* under a slight head, which aids the inductive action of the injectors, and although in many cases this is the preferable arrangement, it is not essential.

In Figs. 2 and 3 the nozzle E is located above the portion of the pipe B, which connects the eduction end of the cylinder and the casing of the valve D, the chamber *a* being connected to the pipe B by a pipe, *y*, and in which the tank G is below the level of the nozzle F. In this case the water will not flow to the chambers *a c* under any head, but will have to be drawn into the chambers by the inductive action of the injectors.

inder beneath the piston being at the same time allowed to flow outward to the main discharge pipe I.

If the car is carrying the maximum or substantially the maximum load, the full pressure of the water upon the piston will be required to raise the car, and as a consequence no pressure will be developed upon the water in the eduction end of the cylinder, which will simply flow out as the piston descends. If, on the other hand, the load is light or comparatively light, the full pressure of the water upon the piston will not be required to raise the car, and as a consequence the piston will tend to develop a greater speed, thereby exerting a pressure upon the water beneath it, tending to force the same out of the cylinder. The increased speed of the piston will cause the water to flow through the pipe B more rapidly, so that as the incoming water is forced through the contracted opening of the nozzle E it will acquire a considerable velocity, so as to create an inductive action the same as in

supply pipe H, and as a consequence the pressure upon the opposite sides of the piston will be equal and the car will descend by its own weight, the water in the induction end of the cylinder passing through the circulating pipe and entering the eduction end of the cylinder as the piston ascends.

When the car is descending with no load or only a light load, the piston in the cylinder will not be moved upward with sufficient force to drive the water out of the induction end of the cylinder under much pressure, and it will consequently circulate gently from the induction to the eduction end of the cylinder. When, however, the descending car is heavily loaded, the power developed by the load will drive the water out of the induction end of the cylinder with great force, so that it will issue from the nozzle F with great velocity, and will thus act inductively to draw in a quantity of water from the tank G, which will be added to the volume available for use in raising the car. By this means the power

developed by the descending load is stored up for future use.

In order to prevent the incoming water from entering the chamber *a* and passing through the openings *d* to the waste pipe when the load is so heavy or the flow of the water through the nozzle *E* is so slow that there is no inductive action developed by the injector, and also to prevent the water from escaping during circulation, the openings *d* are provided with check valves, *g*, which permit the water to flow from the induction end of the cylinder to the chamber *a*, but prevent it from flowing in the opposite direction. In order to prevent the incoming water from passing through the pipe *f* to the tank *G*, and also to prevent the circulating water from escaping in the same manner when the load upon the car is light, the pipe *f* is provided with a check valve, *h*, arranged similarly to the valves *g*.

One convenient form of mechanism for adjusting the nozzles is illustrated in Fig. 1 in connection with the nozzle *E*. For this purpose the nozzle is provided upon its side with a rack, *k*, which is engaged by a small pinion, *l*, mounted upon a shaft, which extends through a stuffing box and is provided with a handle (not shown), by which it can be conveniently operated. The nozzle *F* may, of course, be provided with a similar apparatus.

Where both of the nozzles *E F* are, as illustrated in the present case, located in the same pipe, which serves both as a supply and a circulating pipe for the motor cylinder, it is desirable that means should be provided by which the entire volume of water when entering the induction end of the cylinder will not be required to pass through the nozzle *E*, and by which the entire volume of water when circulating will not be required to pass through the nozzle *F*. This is desirable because the passage of the water through the contracted openings of the two nozzles throttles it more or less, and subjects it to an unnecessary amount of friction. To avoid this, each of the injectors may be provided with a by-pass, communicating respectively with the chambers *a c* and with the pipe *B* below and above the respective injectors. The by-passes *v* are provided with reversely arranged check valves, *z*, which act to compel the water, when entering the induction end of the cylinder, to pass through the nozzle *E*, but permit it to pass around the nozzle *F*. During the circulation of the water the operation is reversed and the water is compelled to pass through the nozzle *F*, while a part of it is permitted to pass around the nozzle *E*. Provision is also made for automatically regulating the flow of the water into the induction end of the cylinder to conform to the pressure of the water and the load to be raised, so that as the pressure upon the water beneath the piston increases the flow of water into the induction end of the cylinder will be diminished, and *vice versa*.

Practical tests of this elevator showed that as the load on the elevator platform, or the pressure in the elevator cylinder (which are equivalent), was increased or diminished there was more or less water taken from the tank. All water taken from the tank increased the economy, as it would otherwise be allowed to flow away.

The Board of Engineers that has for a long time been considering for the War Department the question of the feasibility of filling up the Harlem River from Third to Eighth avenues, is understood to have made a report favoring the course suggested, whereas the New York Chamber of Commerce and other commercial bodies are opposed to spoiling the river, arguing that the contemplated improvement will become an important channel of traffic between the Hudson River and the East.

Our Tin-Plate Mills.

Ira Ayer, special agent of the Treasury Department, whose statistics of production of tin plate in the United States we quoted in a recent issue of *The Iron Age*, has published, as a part of his report, the results of observations made concerning the condition of the industry. We quote as follows, since the report brings together in convenient form for study a good many data scattered in the form of news paragraphs in the columns of *The Iron Age* and other periodicals:

During the past quarter the Keystone Tin Plate Company of Philadelphia, Pa., who had a small plant, suspended after a few weeks of production, owing to difficulties of a personal nature. I am informed that they are liable to resume under the same name, but with a different management.

The firm of William T. Simpson & Co. of Cincinnati, Ohio, who has been among the list of manufacturers, but whose production has been inconsiderable, furnished no returns during the past quarter. They inform me that what little they have done has been simply by way of experiment. The Lewiston Tin Plate Works of Joliet, Ill., which began the erection of a complete plant, to include the manufacture of black plates, have suspended their building operations for want of the necessary capital to proceed. I am informed that a defective land title will probably prevent the work being resumed.

The Anderson Tin Plate Company of Anderson, Ind., began building about one year ago without experience or the necessary capital, and for some months their operations were experimental. The company ran behind in their finances, and a forced sale was made to satisfy a judgment of about \$300, the owners having a year in which to redeem their property. The company have been operating a five-roll Morewood tinning machine, and when I was there June 21, 1892, they were putting in an Edwards machine, which was expected to be ready for work about July 1, 1892. The plates produced by this firm have found ready sale, being of excellent quality. The firm are now making an effort to adjust their financial affairs, the intention being to continue the work of production as heretofore, but on a larger scale. A new and substantial wooden structure, directly on the main line of railroad, furnishes ample room for the operations proposed.

The McKinley Tin Plate Company of Pittsburgh, Pa., who were reported to have gone out of business, reorganized under the same name, and have erected a substantial plant at Wilkesburg, Pa., which they expect soon to enlarge.

Within the past few months four firms have suffered from fire. As this seems not to have been fully understood, and hence to have been the subject of some unfavorable comment, it seems proper briefly to present the facts, which are as follows:

1. In March 1892, the N. & G. Taylor Company of Philadelphia, Pa., who occupied temporarily and for experimental purposes a rented building, were burned out. During the last three months the firm have been engaged erecting large and substantial works of brick and iron on Tasker street, in Philadelphia, near the Delaware River. These works are bounded on two sides by the tracks of the Pennsylvania Central and the Baltimore & Ohio railroads, and on the third side by the "Belt Line," which is projected to connect with all trunk lines running into Philadelphia. At the time of my visit to their new works, made July 23, 1892, the walls of all their buildings were found to be completed, and on some of the buildings the roofs were

nearly finished. On the tinning house, which is 50 x 305 feet in length, and which is built with chimneys and places for 23 tinning stacks, the iron trusses were being placed for the roof.

The foundations for two tinning machines were being laid, and the expectation of the firm was that they would be engaged in the actual work of production by August 20, 1892. The estimated yearly capacity of the plant when finished is over 30,000,000 pounds.

2. On May 12, 1892, the Pittsburgh Tin Plate Works of New Kensington, Pa., were destroyed by fire. On July 11 following the firm had nearly completed a fine steel building, in which they proposed to operate three tinning stacks instead of two, as before. On the date last named they hoped to be in operation August 1, 1892.

3. The firm of Coates & Co. of Baltimore, Md., lost a portion of their works by fire in June, 1892. On the occasion of my last visit to their place, July 22, 1892, the work of reconstruction was going rapidly forward. The machinery of their rolling mills was in motion and under a temporary shelter, the cold rolls were in operation on the black plates, as were also the annealing furnace, the pickling department, &c. Arrangements had been perfected for starting their tinning plant, which had not been injured by the fire, on Monday, the 25th of the same month. The firm were at that time maturing plans for enlarging their works to double the capacity before the fire.

4. The remaining firm was the St. Louis Stamping Company of St. Louis, Mo. On the night of July 4, 1892, this firm had a fire in their tinning house, which practically did no further damage than burn out the roof and the dependent shafting, together with the hoods, &c., over the tinning kettles.

When the fire occurred 11 stacks were in operation. Repairs were hastily made, and on July 21, 1892, six out of the 11 tinning stacks were running. The remainder, it was expected, would be in operation by the end of that week.

When in St. Louis, on June 20, 1892, this firm were putting down foundations of the most substantial character for ten additional stands of cold rolls, when their 12 stands of hot rolls, making six hot mills complete, were to be put solely upon black plates.

To this work of enlargement six additional tinning stacks were being built, making 16 in all. The firm expected that the whole would be completed ready for operations by September 1, 1892.

With respect to the origin of these fires it may be stated, in general, that they were due to the inflammable nature of oils used, and in part, probably, to want of experience in guarding against accidents on this account.

I may mention in this connection that recently several strong firms have entered the list as producers, and are now erecting works which, during the next 12 months, will call for an investment in buildings and plant probably of \$250,000 each.

Among these are the firm of Hughes & Patterson of Philadelphia, Pa., who have large rolling mills on the Delaware, and who are now putting up extensive and substantial brick and iron structures for the rolling of black plates, as well as for every department of tin-plate manufacture. The foundations of these buildings were in process of construction when I was there, July 23, 1892.

At Elizabethport, N. J., the firm of E. Morewood & Co. of Llanelly and Swansea, Wales, are erecting large and substantial works of brick and iron, the estimated capacity of which will be from 20,000,000 to 25,000,000 pounds yearly, working two turns, which is the purpose. The company, who will be known as

the Moorewood Tin Plate Mfg. Company, expect to begin the work of actual manufacture about October 1, 1892. For the present they will use black plates made at their own works in Wales. The works at Elizabethport will be enlarged within the year, either by doubling the tinning capacity or by the erection of the necessary rolling mills to supply the black plates to the works now building. Three acres of land have been purchased directly on tide-water, and the railroad company are making connection direct to the works.

At Gas City, Ind., which is in the natural-gas section of the State, the same firm are now erecting tinning works under the name of E. Morewood & Co., the building of which is as far advanced and will have the same capacity as the works at Elizabethport. Here the firm have 52 acres of land and will within the present year erect a four-mill plant with all the necessary appliances for the manufacture of black plates. This plant the firm propose steadily to enlarge until a 20-mill plant is in operation. Siemens-Martin open-hearth furnaces will convert the pig iron into steel, from which it is cast into ingots and is thence carried through the various processes of manufacture into steel billets, bars, sheets and black plates, ready for tinning. The plans propose an investment in rolling mills and tinning plant, when completed, of \$1,000,000. The yearly capacity of this plant when in full operation is estimated at from 58,000,000 to 60,000,000 pounds. On a visit to the works at Elizabethport a few days since I met Charles M. Stuart, who is a gentleman of much intelligence and has charge of the business in the absence of J. H. Rogers, the managing partner of the firm in Wales. Mr. Rogers is among the largest and most influential of the Welsh manufacturers, having been for some years chairman of the Tin Plate Manufacturers' Association of Wales. The firm have ample capital to enable them to carry forward successfully the work they have undertaken. I was informed that it has been fully determined that the foremen only shall be from Wales, and that Americans will be employed in the various other departments of labor.

Other large firms referred to in my former report are about ready to begin manufacture, or are pushing the work of preparation. In some cases unlooked for hindrances have occurred, as was to have been expected, and the work of actual production has been delayed.

I may here refer to the Somerton Tin Plate Works of Brooklyn, N. Y., which are now about ready to start, and the mills of which will probably be turning out the metal sheets during the present month. In visiting these works some weeks since, Mr. Rogers, whose name has been previously mentioned, expressed his astonishment at finding so complete a plant.

From the statement of an English paper Mr. Rogers is understood to have referred to this plant, on his return to Wales, as the "finest he had ever seen." He also, as is reported, spoke of an "enormous steel and tin-plate concern" that was being built in Chicago, by which he is understood to have referred to the Corning Steel Company of that city. In calling at the office of this company in Chicago, June 17, 1892, I met the president, Charles S. Corning, who furnished me with the following statement of facts relative to their present and prospective operations: Mr. Corning stated that the company were organized in January, 1892, under the laws of Illinois, for the purpose of engaging in the manufacture of sheet steel, with black plates as a specialty. The capital stock of the company was \$250,000, all of which was paid in in cash, and which, according to their plans, was to be increased to double the amount by January 1, 1893. The works were at the

time in course of construction at Hammond, Ind., which is just outside of the city limits of Chicago. A building of brick and iron, 300 x 160 feet, with cement and stone foundations, had the walls already up, and the trusses were then being placed in position. The intention of the firm is to manufacture nothing but sheet steel of the best quality, using the basic open-hearth process. The rolling mill, it was expected, would be in operation September 1, 1892. Two 1200 horse-power Corliss engines for driving the mills were built ready for shipment, and portions were already on the ground. This part of the machinery was built by a large foundry and machine works at Fort Wayne, Ind. A company at Youngstown, Ohio, were making all the roll trains and some of the shears. Other parts of the machinery were being made at Pittsburgh, Pa., Cambridge City, Ind., Bay City, Mich., and in Chicago. The said rolling mills will employ 275 men. As soon as the rolling mills are in operation the company will erect their tinning works to manufacture bright tin plates on a large scale. The intention is to introduce the most improved machinery and methods in every part of the business. The plans were all shown me, duly signed by the contractors, as was the contract itself. I was also shown correspondence from at least two of the manufacturing firms indicated, in which reference was made to considerable portions of the machinery already finished. The site consists of 20 acres, which was purchased by the company for this special purpose. A track connecting with five trunk lines of railroads runs directly into the works. The Pittsburgh, Fort Wayne & Chicago Railroad were then building a connecting track, $1\frac{1}{2}$ miles in length, to take their share of the business, and a suburban station was to be established at this point. The estimated output of the rolling mill when fully completed was from 75 to 100 tons every 24 hours, based on sheets 27 wire gauge.

On Monday, June 20, 1892, the American Tin Plate Company of Elwood, Ind., started a new complete plant, which was in operation rolling the steel sheets and making bright plates on my arrival there June 22, 1892. There are three buildings, as follows:

	Feet.
The rolling mill (iron).....	130 x 176
The cold-rolling mill (brick).....	135 x 60
The tinning house (brick).....	170 x 50

The engine for the four hot mills (two stands of rolls each) is 1000 horse-power. The one for the cold mills (four stands at present) is 600 horse-power. Two of the hot mills were at work, and the other two were to be ready for work in a few days. The machinery of the cold rolls was running, and the rolls were being polished ready for use. The necessary heating and annealing furnaces were complete, with the doubling and trimming shears. An automatic pickling machine was rapidly approaching completion. These works were built new throughout for the sole purpose of rolling the black plates and of making bright tin andterne plates. The buildings are ample, and are made in the most substantial manner. The works are in the midst of the natural-gas section of Indiana. A gas well put down by the company just outside the works furnishes the fuel for the boilers and furnaces and for the tinning stacks. In the tinning house there are chimneys and places for ten stacks, five five-roll Morewood tinning machines were in position, one of which was in operation, and the other four were being put in readiness to start immediately. The five additional stacks were to be put in as soon as practicable, one or more of which were to be the Norton's patent, by the automatic palm-oil process. The plant when perfected accord-

ing to present plans will have cost, as Col. A. L. Conger, the president of the company, informed me, about \$250,000. As soon as this is in successful operation, the company are prepared to enlarge in every direction, and will make their own steel from the open-hearth furnace. The men connected with this enterprise have abundant capital at their command, which they are prepared to invest to any required extent, as the business may warrant. The estimated capacity of the present plant is from 11,000,000 to 13,000,000 pounds annually. The persons employed in the rolling mills and in the tinning house are principally Americans. Elwood is rapidly becoming a manufacturing center, the chief attraction being the supply of natural gas. A number of those interested in the tin-plate works are also interested in one of the largest plate glass works in the country, which is located at this point and is in successful operation. These and other large manufacturing interests have grown up at Elwood during the past five years.

Marshall Bros. & Co. of Philadelphia, Pa., are in successful operation with two hot mills, two stands of rolls each, and three stands of cold rolls, together with the necessary annealing furnaces, machinery for tinning, &c. This firm are constantly adding improvements to their plant, and contemplate doubling their present rolling-mill capacity at an early day. A large bar mill rolls the bars from steel billets, which are obtained from iron and steel manufacturers in the vicinity of Pittsburgh and elsewhere. The bars, after rolling, are cut into the requisite lengths, and are then known as "tin plate bars." These works are located on the Delaware River, and cars from the Pennsylvania and Reading railroads run directly into the works. A careful estimate made by the head of the firm, Alfred Marshall, at the time of my visit, June 10, 1892, placed the cost of that portion of their works which is devoted exclusively to the manufacture of tin andterne plates at \$150,000. The total number of persons employed in their tin-plate manufactures will average about 150.

The United States Iron and Tin Plate Manufacturing Company of Demmler, Pa., have enlarged their rolling mill and otherwise are making additions to their plant. The present plant consists of six stands of hot rolls and five of cold rolls, with the necessary appliances for pickling, annealing and tinning. There is a bar mill for rolling the tin-plate bars from steel billets, and an improved squaring machine is provided. When there, June 24, 1892, a new pickling machine was being put in, which it was expected would be in operation in July following. The cost of that portion of the buildings and plant specially designed and used for tin-plate manufacture was estimated by the president, Mr. Cronmeyer, at \$250,000.

The Blairsville Rolling Mill and Tin Plate Company, at Blairsville, Pa., which I visited June 27, 1892, expect to begin the work of actual manufacture not later than September 1, 1892, with a plant of very substantial character. The buildings are one of brick and one of iron, the two covering an area of 120 x 140 feet. There are three stands of hot rolls, three of cold rolls, with automatic pickling machinery and five tinning stacks. The boiler and engine have a capacity which will permit of enlarging the rolling mill plant, as is intended. The firm have been delayed by various unforeseen causes in beginning the work of actual production as soon as was expected.

The Falcon Iron and Nail Company of Niles, Ohio, have let most of the contracts and are building the foundations for their new tin-plate works, which will include a complete rolling mill plant for the manufacture of black plates.

About two years ago the Britton Rolling Mill Company, of which J. W. Britton is president, bought 11 acres of land, located on Hoyt avenue and the Lake Shore & Michigan Southern Railroad in Cleveland, Ohio, and later erected a rolling mill designed primarily for the manufacture of tin plates, although it is also rolling sheet and plate iron. The main building of these works is of iron, 165 x 260 feet. Plans are fully matured for enlarging the present building, giving thereby the necessary space for one pickling house, 40 x 60, one annealing house, 54 x 84, and a tinning house, 48 x 130. The engine for the tin-plate mill is 1000 horse-power, and was on the ground at the time of my visit, June 15, 1892, as were also the housings and bed plates for two tin-plate mills and two stands of cold rolls. For the latter there will be a separate engine of 400 horse-power. According to present plans, there will be four hot mills, two stands of rolls each, and four stands of cold rolls, with the necessary heating furnaces, doubling and trimming shears, annealing furnaces, pickling machines, &c. The bar mill, for rolling the tin-plate bars from steel billets, is already in operation. Mr. Britton informed me that they would commence the erection of the enlarged works early in July, and he expects to have the four tin-plate mills and the tinning department all in operation before the close of the present year. He informed me, further, that the capital stock of the company is \$250,000, the largest part of which will be invested in their tin-plate operations.

The Cumberland Steel and Tin Plate Company of Cumberland, Md., are erecting substantial works, to consist of four hot mills, two stands of rolls each, and four stands of cold rolls; also a pickling machine and other necessary appliances for the manufacture of black plates. One building—that for the rolling mill, which is of steel, 60 x 100 feet—is now in process of erection, the object being to perfect the manufacture of black plates before engaging in tinning. The engine will be 1000 horse power. A portion of the machinery had already been contracted for June 3, 1892, when I visited Cumberland, where I had an interview with the president of the company, J. Wilson Humbird of that place. I subsequently met Mr. Dickey, of the firm of Hicks & Dickey of Philadelphia, who have a large interest in these works. The immediate investment in buildings and plant was estimated by Mr. Dickey at \$75,000, but the plans, when fully carried out, call for an outlay much in excess of that amount. It is expected that the works will be in operation in October, 1892.

The New Castle Steel and Tin Plate Company of New Castle, Pa., are building a complete new plant, and are pushing the work as fast as possible. The foundations for machinery are nearly completed. The main building is all of steel and iron, and is 113 by 251 feet, and 24 feet high from floor line to under side of lower chord of truss. The roof is now going on to the roll, lathe, machine and tool house, which is 40 feet 8 inches by 70 feet, and 16 feet high, built of stone and brick, with slate roof. The annealing, pickling, tinning, shipping and office building is 60 feet 8 inches by 360 feet. Contracts are closed with the Garrison Foundry Company of Pittsburgh for four hot mills, two stands of rolls each, and four stands of cold rolls; also for one 21-inch three-high bar mill. When in Pittsburgh, June 28, 1892, I called upon this firm and was shown the plans for these mills, which they were then making. Two 700 horse-power Corliss engines, with boilers, &c., have been contracted for with the Bass Foundry and Machine Works of Fort Wayne, Ind. The tinning machinery,

doubling and trimming shears, &c., are contracted for with the Lloyd Booth Company of Youngstown, Ohio. The machinery is to be delivered in August and September, 1892. The engines and buildings are arranged for two additional mills, which will be put in soon. The plant, which is being built for cash, will cost \$200,000. The firm hope to begin the actual work of manufacture by December 1, 1892, at the latest.

The firm of Wallace Banfield & Co. of Irondale, Ohio, have been most successfully engaged in the manufacture of black plates, which they have largely tinned themselves, and have also sold largely to other tin-plate manufacturers. Hitherto they have had in operation two hot mills, two stands of rolls each, and two stands of cold rolls. The firm propose to double their present plant by turning all their rolls into tin-plate mills, adding the necessary cold rolls. By these means they will have in operation by the end of the present year four hot mills, two stands of rolls each, and four stands of cold rolls, with an annual output of over 10,000,000 pounds. There are six Morewood tinning stacks, with pickling machines, &c. The plant is supplied with a bar mill, which rolls the tin plate bars from the billets. The firm state that they have at present 225 persons employed in their tin-plate industry.

The firm of Merchant & Co. of Philadelphia, Pa., large importers and dealers in metals, &c., have found that their present building, which is a substantial structure of brick and iron, erected in part for the purpose, has proved entirely inadequate to supply the rapidly increasing demand for their plates, and they are now erecting another building, which will double their present capacity. The firm use the Griffiths machine, which is a Welsh patent, and at the time of my visit there, June 9, 1892, I found one of these machines running steadily two turns. They were then further engaged in putting in four of these machines additional, all of which, it was expected, would be in readiness for work some time in the following month, July last.

The Norton Brothers of Chicago were pushing forward the work upon their plant at Maywood on the occasion of my visit there, June 16, 1892. The tinning house, which is a substantial wooden structure with stone and cement foundations, is 36 x 270 feet, and was finished with the necessary space for 30 tinning machines, which the firm propose to put in as fast as they can be made in their machine shops. These machines are of the firm's own invention, and are covered by patent, being known as Norton's Automatic Palm-Oil Tinning Machine. I was informed by one of the Norton Brothers that these machines have a capacity of 70 boxes per day of ten hours, either 14 x 20 or 20 x 28 IC plates. This is an output much in excess of any machine of which I have knowledge. At the time of my visit the firm had just booked an order from the Fairwood Tin Plate Works, at Gowerton, near Swansea, Wales, for two of these machines. The order was placed by the managing partner of the works after personal observation of the practical working of the machine at Maywood. The manager declared that the invention of this machine had solved the problem of making a perfect tin plate automatically with palm oil instead of acid flux, and without skilled labor. The palm-oil process is regarded as superior to all others in tin-plate manufacture, for the reason, as is claimed, that it produces a more durable plate. The firm had also devised a machine, the essential features of which were in operation at Maywood, for quickening and cheapening the process of cleaning the sheets after tinning. By this means it is expected that one person can do what has

hitherto required the labor of three or four persons, and the work will be done better than by the old hand cleaning process. The firm propose ultimately to erect their rolling mills for the production of black plates, but are now working upon an invention by which they hope to cheapen the rolling process by the manufacture of the sheets direct from the fluid steel. They have erected a complete plant, including a 6-ton open-hearth Siemens Martin furnace for steel making, with which to carry on their experimental work, all at an expense of more than \$100,000. The firm have ample capital and expect to make an additional outlay of \$250,000 to \$300,000 in completing their plant. The estimated capacity of their mills when completed is from 40,000,000 to 50,000,000 pounds annually.

As to the quality of American tin andterne plates, it may be stated that it is equal if not superior to that of foreign plates of the same kinds, which is evidenced by the fact that they are eagerly sought after by consumers, and that manufacturers are generally behind with their orders. A principal representative of one of the large stamping companies of the country, which has used extensively both the American and foreign product, said to me that, from their experience, plates made from American soft Bessemer steel stood the test of deep stamping equally well with the best English open-hearth steel. I might enlarge, but what has been stated will serve to show the present rapid strides of the new industry under the operations of the present law. It furnishes, further, substantial grounds for belief that the time is not far distant when the United States will be the largest producer, as it is now the largest consumer, of tin plates, of any nation in the world.

Tin Mines.

With respect to the production of what is known as the Temescal tin mine, located in San Bernardino County, Cal., I have before me the sworn statement, dated July 29, 1892, of W. W. Stewart of the firm of W. W. Stewart & Co., at San Diego, Cal., selling agents of the mines.

From this statement it appears that the first shipment received by the firm from the mine was—

	Pounds.
June 1, 1891.....	11,826
Shipments from July 1, 1891, to December 31, 1891.....	109,282
Shipments from January 1, 1892, to June 30, 1892.....	161,530
Total production past fiscal year..	270,812
Previous production.....	11,826
Aggregate production.....	282,638
Or over 141 tons of pig tin.	

Mr. Stewart states that the mine looks as well as ever it did, notwithstanding reports to the contrary that have been lately circulated. It appears that 110 miners are now employed, and that the stamping facilities have recently been enlarged. It will probably require from three to five years to get the mines opened so as to work them properly. The tin is pronounced by competent experts to be of a fine quality, comparing favorably with the best grades used in Wales in the manufacture of tin plates.

From an interview had recently with the representative of the Harney Peak Tin Mining, Milling & Mfg. Company, whose office is at 42 Wall street, this city, it appears that the development of these mines has been steadily going forward, and that the expectation is soon to begin the work of crushing and concentration.

This work has been unexpectedly delayed by the heavy snows in that section, which remained on the ground until late in the season, and prevented the building by the railroad of the connecting tracks to the various mines. The expenditure dur-

ing the past year in the sinking of shafts, the running of levels and other operations required in the opening up of the mines has averaged about \$35,000 monthly. The mill for crushing and concentrating the ore is at Hill City, which is the center of operations. The mill is built with a present capacity of 250 tons, but with power for 500 tons. The future of these mines, as far as can be determined, is very promising.

THE WEEK.

Twenty large elevators are building on the line of the new Wabash extension from Detroit to Chicago, and an equipment of 30 new locomotives and 1600 freight cars is ready for the opening.

The Turkish Government have just completed an armor-clad battle ship, the first built in a Turkish shipyard.

Asiatic cholera is rapidly spreading through European ports, and has a particularly strong hold in Germany at those points most frequented by Russian emigrants. The Hamburg-American Packet Company are the first of the transatlantic liners to separate first class passengers from emigrant traffic. The quarantine and health officers in New York claim that they are taking all needed precautions.

The new Hawaiian protective tariff applies to numerous articles in general use; but aside from firearms, which pay a duty of 25 per cent. ad valorem, metals and manufactures of iron and steel are not affected.

Pennington's air-ship factory in Chicago is just completed and the aluminum car, which weighs 235 pounds, the inventor says, will start for New York in three or four weeks. The motor power consists of two beautiful little engines of alloyed aluminum. These engines each consist of four cylinders with four piston rods attached to a single center and acting with reciprocal power. Hydrogen gas is expelled by an electric spark. One engine weighs a minimum of 45 pounds and has a maximum capacity of 15 horse power. These engines drive the great wheel of four spoons that bores through the air auger-like and draws the ship after it, while the little fans on the sides elevate the ship or lower it.

Chancellor McGill of New Jersey has decided the Reading combination to be illegal and has granted an injunction forbidding its operation. The chief argument for an injunction was based upon the claim of the State that as the Reading controls the Port Reading Railroad, the Jersey Central lease is in reality a lease to the Reading, and that the Reading and Jersey Central are competing lines within the meaning of the State law. Officers of the combine seem to believe that this decision in no way affects the coal trade, that all the advantages of the combine are secured and that none of the prospective profits will be lost. A Philadelphia paper, which has opportunities for obtaining information, is assured that "the control of all the leading anthracite roads is closely held and they will be operated in harmony without the lease as well as with one."

Canadians conclude respecting the canal tolls question that the amount involved in President Harrison's proclamation is of little consequence after all. The total quantity of freight which passed through the Welland, as well as the "Soo" canal, last year from both Canadian and United States ports for Canadian ports was only 97,126 tons, the tolls on which at 20 cents per ton would amount to \$19,425.

The recent quick trip of the Cunard steamship Umbria to this port is claimed

to be a great triumph for American Pocahontas coal from West Virginia.

The Connecticut tobacco crop is of the best quality and will yield \$3,000,000 more than the average of previous years.

The New York State Comptroller estimates the cost of the military protection to the railroads during the switchmen's strike at near \$500,000 in round numbers.

Guatemala refuses to pay \$60,000 for guns supplied by the Hotchkiss Gun Company to the order of ex-President Barrios.

President Vanhorne of the Canadian Pacific Railway proposes to enter into active competition for the Atlantic trade by running fast steamers from Halifax and making the run from that port to Chicago at the rate of 60 miles an hour.

The work of sinking the first shaft in the East River Tunnel to connect New York City with the Long Island Railroad is well advanced, at Long Island City.

The newly organized Improvement Company of Minneapolis, with \$2,000,000 capital, propose to locate a number of manufacturing plants near the city limits.

What has the appearance of a paper trust has been incorporated in New Jersey, with a capital of \$3,000,000. It will be known as the United Paper Company, and the incorporators are all concerned in paper mills in New Jersey, New York and Ohio.

From the last report of the Federal Commissioners of Labor it appears that in the 24,518 strikes on record in his department between the years 1881 and 1887 the strikers sustained an aggregate loss exceeding \$50,000,000. This refers only to the direct loss of wages, and takes no account of the loss to employers.

The effects of a possible blockade of the Western ports in Europe in consequence of the cholera are earnestly discussed by shippers who have contracts to be filled. To some extent exports from New York are checked.

The improved financial condition of Mexico is indicated by the fact that the Government has obtained a loan of \$3,000,000 from domestic banks without any security.

The great Mollenhauer sugar refinery to be opened next month in Brooklyn has been equipped with the latest design of machinery and appurtenances, and will turn out 2000 barrels a day. Seventeen refineries east of the Rocky Mountains refine 44,800 barrels per day.

The new piers building at this city for the Inman steamship line will be 718 feet long and be covered by a steel shed which it is said will comprise 3,000,000 pounds of metal and cost about \$100,000. The rental of the pier will be \$42,500 per annum.

The Canadian Pacific Railroad does not appear to have had great success in attempting to control the American tea trade. Shipments from Japan to Canada up to July 10 were only 2,431,000 pounds, compared with 6,278,800 for the corresponding period last year, while shipments to New York, Chicago and other centers were about the same as last year. The total shipments this year are nearly 20,000,000 pounds.

The new West Side Training School in Cleveland will accommodate 250 pupils. New machinery is being put in, and the boys who have completed a two years' course in the wood-working and forging departments will be enabled to enter the machine shop.

The Croton Aqueduct System.

Although something like \$25,000,000 have been expended already on the New York water system, including about \$15,000,000 for a new aqueduct to provide adequately for the future wants of the city, a new dam in the valley of the Croton River is necessary, which will cost in the neighborhood of \$4,150,000. So far as the Aqueduct Commissioners know, this is by a large figure the greatest sum ever proposed to be expended in a dam for aqueduct purposes, at least in this country. Contractors were invited to submit bids, and the enormity of the work, the large amount of bonds required, and the great capital necessary to carry it on, limited the number of bidders. Only six firms made propositions, and the sums they offered to do the work for varied in round numbers from \$3,500,000 to \$5,566,000.

The contract was awarded to Ex Commissioner of Street Cleaning J. S. Coleman at his figure of \$4,150,573. Engineers the world over will watch the construction of this dam with lively interest. Some difficult problems are to be solved. An enormous watershed is to be controlled by it. It is to be furnished really as a reservoir, wherein are to be dammed up the entire waters of the Croton watershed, containing thousands of millions of gallons, and from it are to be drawn such supplies as the present aqueduct does not furnish.

How Engineers Strike.

Chief Arthur of the Brotherhood of Locomotive Engineers has dictated the following statement touching the policy of the Brotherhood in dealing with strikes, which policy, he says, will explain the attitude of the organization in regard to the trouble at Buffalo:

"On all roads," he said, "where the Brotherhood is established we have general committees of adjustment, whose duty it is to adjust all grievances of the men with the officers of the company if possible. Failing to do so they are required to furnish the Chief a detailed statement, on receipt of which it is then his duty to proceed to the place where the differences exist and use all honorable means to effect a peaceable adjustment of them."

"In event of his failing he then notifies the men that if they are willing to strike he will sanction it. That gives to the men the support of the whole organization. The men determine whether they will strike or not by a two-thirds vote of the members employed upon the road."

"We have thus far, by pursuing this policy for the past 28 years, succeeded in adjusting all differences with but three exceptions."

"We have always expressed a willingness to submit all grievances, when we could not agree with the company, to a board of arbitration, composed of three disinterested persons. Personally I am in favor of that method, and believe it to be the just and proper way of settling disputes growing out of dissatisfaction with wages or hours of labor."

The sharp competition of fast sailing ships around the Horn has led to a protracted controversy among the transcontinental railway companies respecting the proper division of the amount paid annually to the Pacific Mail Steamship Company for space bought by them in order to maintain rates and thus stimulate shipments overland. Moreover, the fifteen-year contract between the Panama Railroad Company and the Pacific Mail will expire next February, and there is a hitch in the negotiations for its renewal. If the Pacific Mail is prevented from using the Panama Railroad for its transcontinental business it will be forced to send its freight around Cape Horn.

The Iron Age

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Pig-Iron Stocks.

The *Bulletin* of the American Iron and Steel Association takes exception to the reports of stocks of pig iron which we periodically make, the principal motive being that the large amounts of stock shown in these reports "may do a vast amount of harm." The American Iron and Steel Association publishes semi-annually a stock report, which includes only those quantities on hand at the furnaces which are "unsold." The figures do not include iron on hand "sold" or the quantities carried at furnaces identified with rolling mills and steel works. No one will deny that the figures thus computed are of great value, but in our opinion they do not tell the whole story or correctly reflect the influence of accumulated iron on the markets of the country.

To begin with, the term of "sold" stocks is a very elastic one, and is interpreted by pig-iron manufacturers in a very different manner. It may well be asked why the American Iron and Steel Association stops where it does. If the fact that iron is "sold" takes it out of the market, why should not those quantities contracted for for future delivery be deducted from the stocks? We have often had reports from furnaces in which they give a stock of say 5000 tons, but remark that they have sold it all, and have contracts for future delivery for say 5000 tons more. Under a strict interpretation of the methods of stock accounting used by the American Iron and Steel Association sales for future delivery should be deducted from existing stocks with as much justice.

The principal trouble with the "sold" stocks is that their status depends very greatly upon the tendency of the markets, upon the consumption of iron and upon other contingencies. On a declining market, "sold" stocks are not always delivered, the buyer frequently squirming out of the bargain. When consumption is on the decline deliveries are postponed, and the "sold" stocks applied to certain contracts must seek other customers. The same thing occurs when foundries or rolling mills are idle from some cause. The furnaces go on piling iron, but the stock remains "sold," and with it all the new iron made, because the furnace has contracts which technically take the iron out of the classification of "unsold" stocks.

In reality contracts for future delivery should be set off against the production of the months for which the delivery is arranged, unless these contracts are so large that accumulated iron must be drawn upon to fill them, the plant being idle or unable

to keep up with the sales. The average furnaceman figures, however, as follows: It is true that I have a stock of 10,000 tons of pig iron, but I have on my books orders for that amount, which I shall fill from that stock, hence I shall classify it as "sold." As a matter of fact, the sales apply to future production, and the stock is held in the hope of a revival of the demand, or as a reserve against contingencies or accidents.

The American Iron and Steel Association does not include in its stock reports the amount of iron carried by the rolling mills and steel works, and yet these stocks often do play a very important part in the markets for pig iron, for raw materials and for finished product. When they are too large, locking up unwieldy sums, the rolling mills or steel works may adopt one of three lines of policy: They may force their surplus pig on the market, or they may conclude to realize by crowding finished product into consumption, or finally they may decide to stop a part or the whole of their furnace plant, and either cancel contracts for ore and coke or sell the raw material in the open market. If, on the other hand, their stock is small and is being rapidly depleted, works which under ordinary circumstances supply their own requirements appear as large purchasers. There are very few large mills in this country whose production of pig iron, fairly uniform as it is usually, is so adjusted that it coincides with the frequently large and sudden fluctuations in the demand for finished product.

To an outside maker of Bessemer pig, for instance, the unsold stock of charcoal iron and foundry and forge grades possesses relatively little interest. To him the vital question is whether the steel works are not making enough to supply their own demands, or whether they are piling up iron until they appear as competitors for the trade of outsiders. Pig iron which to-day is ignored by the American Iron and Steel Association may turn out to be very uncomfortably "unsold" stock next month.

Valuable as the reports of "unsold stocks" are, they fail to truly reflect the condition of the trade. We know that they have the tendency to make matters look better than they are. We have again and again heard the comment, "Unsold stocks as reported by the American Iron and Steel Association show that they amount only to a few week's consumption," and the comparison is frequently made between them and the current rate of production. But if rolling mill and steel works stocks are ignored, why count the make of their furnaces in the production of pig iron? As a matter of fact, the "unsold stocks" represent a very much larger proportion to the make of pig iron to be sold in the open market than would appear from Mr. Swank's statistics. In the case of charcoal pig iron, which is practically all made for the open market, the "unsold" stock of 218,812 gross tons on July 1 was equal to 4.7 months' production at the rate of the first six months of this year.

The "unsold" stocks of anthracite and coke pig iron were reported at 519,134 gross tons, which does not seem large when the figure is referred to an output in six months of 4,519,121 gross tons. But of this the large rail and steel mills—the Bethlehem, Edgar Thomson, Lackawanna, Cambria, Pennsylvania Steel, Maryland and Illinois—made 1,189,142 gross tons, or more than one quarter, not a pound of whose stocks are reported. Together the Colorado, Burden, Troy, Anvil, Brooke, Chester, Phoenix, Pioneer, Allentown, Etna, Rosena, Sharon, Stewart, Clinton, Edith, Rebecca, Valentine, Emma, Duncannon, North Branch, Paxton, Vesta, Roanoke, Ashland, Norton, Belmont, Riverside, Wheeling, Bellaire, Benwood, Cleveland, Emma, Belfont, Glasgow, Brown Bonnell and Hannah furnaces produced in the first half about 685,000 tons, all of them being connected with rolling mills and steel works, although some, like the first group, sell some metal in the open market. In other words, about 40 per cent. of the product was assumed to have no influence on stocks. Of the second group, 17 works, which made 278,978 tons of pig iron in the first six months of 1892, reported stocks of 62,328 tons. In other words, they might shut down their plants for nearly six weeks before, as a body, they would be bare of stock.

In the matter of stocks, one point was brought out during the suspension of work at the furnaces of the Birmingham district some years since. It was found that where the distances between the furnaces and the consumers are large, the quantity of pig iron in transit in itself is a very important factor. Iron kept reaching consumers for weeks and bridged them over the trouble. Yet this in-transit iron would not rank as stock.

The *Iron Age* has never pretended that its stock reports are complete. There is not a single statistical report in the branches with which we are familiar which is complete, whether it be compiled by a newspaper, by the United States Government or by the American Iron and Steel Association.

Mr. Swank says: "Statistics to be worth anything should be authentic; they should be exact; they should say what they are intended to mean. Such are the statistics which are compiled and published by the American Iron and Steel Association." Are the figures published by the American Iron and Steel Association exact? Are they absolutely correct? Can they be challenged in any respect? We say without fear of contradiction that the statistics of the American Iron and Steel Association are not exact. They have not been exact for any year from the time that the American Iron and Steel Association first began to collect statistics. They are less exact to-day than they were 20 years ago. They are much less exact to-day than they were ten years ago. They are much more open to criticism to-day than they were even five years ago. We challenge Mr. Swank to mention any single year during the time that he has had charge of the collection of statistics for the Amer-

ican Iron and Steel Association in which he has received reports from every pig-iron manufacturer, every bar-iron manufacturer, every nail manufacturer and every steel maker. He cannot name a single year. We know large establishments whose owners make it their boast that they do not allow any information whatever with regard to their works to pass into any outside hands. They have even refused to give such figures to the United States Government. Can such statistics as Mr. Swank's be "exact" which deal with the branch of trade including such establishments? If a furnace company has a capacity for turning out 50,000 tons of pig iron a year, can Mr. Swank guess whether that establishment has made in the year for which he is collecting statistics 20,000 tons or 50,000 tons? If a steel works has a capacity for turning out 200,000 tons of steel a year, can Mr. Swank guess whether that establishment has made 150,000 tons or 200,000 tons? If he does not get direct reports from such an establishment he is obliged to guess at its product, and his statistics when founded on such guesses are not "exact." Mr. Swank may be able to add columns of figures with perfect accuracy. We do not question his ability in this direction, but if the items in the columns are not "exact," will his exactness in mere addition make them "exact" statistics? This is a conundrum which we would like him to answer.

Not one of the great rail mills, although they all give us figures of production every month, sends data in regard to stocks, although most of them have done so at different times in the past. We should not be at all surprised if the actual stock of pig iron in the hands of producers is fully 500,000 tons greater than that of the "unsold" stocks reported by the American Iron and Steel Association. The latter would do good work if in the future it supplemented its statement of "unsold stocks" with figures dealing with the total stocks. We do not believe that it would do harm. On the contrary, the full truth would be of great service to the whole iron trade. To-day the majority in the trade, sellers as well as buyers, are laboring under the impression that we are sailing a good deal closer to the wind than we really are. A complete stock report on September 1, if it could be obtained, would show the effect of nearly two months' stoppage of the majority of the Western rolling mills. "Unsold stocks" might exhibit an actual decline. We hold that to confine stock statements to the latter alone is inadequate and may at times lead to conclusions which are erroneous, and, therefore, harmful. Let us have the whole, unvarnished truth. The American iron trade can stand it. It does not need the tenderly protective solicitude of Mr. Swank.

Cheap ores are helping the Lehigh Valley furnacemen. We understand that Lake Superior ore, non-Bessemer, guaranteed 56 per cent., but generally carrying 57 and

58 per cent., has sold at Buffalo at \$2.80, with freights at \$1.50; this ore costs, delivered at furnace, \$4.30. Ore from the Salisbury region is selling at 7 cents a unit, delivered, for a 50 per cent. ore, while New Jersey and New York magnetites fetch \$3.60, delivered.

The Great Chicago Canal.

On September 3 work will formally begin on the construction of the ship canal to connect Lake Michigan at Chicago with the Mississippi River. Work was, however, actually begun a week ago, a few miles north of Joliet, in the diversion of the Desplaines River from its bed to a new channel, the old bed forming part of the proposed route for the canal. In engineering circles this project is regarded as one of the most important undertakings of this period of the world's history. The canal, if pushed to successful completion on the lines laid down by its projectors, will rank with the Suez and Manchester canals. Such a waterway as this is expected to be will exert a great influence on the trade of the Mississippi Valley, as well as the great lakes. The section through which it will pass is well supplied with railroads, it is true, but a waterway of the noble dimensions proposed will add immense facilities for the shipment of all sorts of commodities over immense distances at very low rates for transportation and without breaking bulk. The continuous increase in the tonnage of the comparatively insignificant Illinois and Michigan Canal, which runs through the same section, shows that a great deal of freight seeks water carriage notwithstanding the existence of superb railroad facilities. The section of the canal which is now in course of construction will be 160 feet wide and 35 feet deep. Contractors for other sections of the canal are rapidly making preparations to begin work.

Sanitarians will not lose sight of the fact that the construction of a navigable waterway is not the sole object of the excavation of this great ditch. It is also intended to supply the necessary drainage for the city of Chicago. The rapid growth of the population of that city had years ago caused the authorities to realize that a better system of drainage than was then in use would have to be devised. Pumping the sewage into the Illinois and Michigan Canal was recognized as only a temporary expedient which would soon prove inadequate. The construction of a great channel through which the waters of Lake Michigan would flow to the South by a natural movement was seen to be the most feasible solution of the problem. When this channel is constructed, so great a volume of lake water will pour through it that the sewage of the city can be diverted into it without so befouling it as to render the banks of the stream uninhabitable, which is now the case with the Illinois and Michigan Canal. There has been an addition of at least 300,000 souls to the population of Chicago since the new drainage scheme took practical shape in the election of commissioners to carry

out the work. The necessity of pushing it rapidly to completion from this time forward could hardly be more strongly presented.

The drainage commissioners have been so dilatory in getting down to practical business that the citizens of Chicago are to be congratulated on the fact that work has at last actually begun. For a long time the scheme made such slow progress, notwithstanding its authorization by popular vote, that there appeared to be imminent danger of its total collapse. The slow movement has been so unlike Chicago that there was a suspicion that adverse influences were operating to compass the defeat of the drainage scheme. Almost enough time has been lost to create a wave of popular discontent with the whole project and the abolition of a drainage commission organized to do nothing. The steps now taken mean business, and the channel is really being excavated. It will be completed none too soon for the welfare of the citizens of Chicago.

Western Pig Iron.

Considerable comfort can be extracted from the stock figures of the Western Pig Iron Association for August. From these figures it appears that stocks of coke pig iron increased 31,029 tons in July. But, inasmuch as Pittsburgh, the Shenango Valley and the Mahoning Valley unitedly made an increase of 34,490 tons, it would appear that outside of these districts there was an actual decrease in stocks. In other words, in those parts of the country not specially affected by the stoppage of rolling mills and steel works consumption has caught up to the current rate of production. Turning to Lake Superior charcoal, it appears that in Michigan and Wisconsin there was a reduction of 13,189 tons in July, while a slight increase was made in stocks of Southern charcoal. The tide seems to have turned in Lake Superior charcoal at last. This is the largest reduction in stocks which has been noted for a long time. The September statement will show a still heavier decrease, as fewer furnaces are now in operation in Michigan, while shipments of iron have latterly been rapidly growing. It is believed that this is the first time since 1865 that every furnace in Marquette County, Mich., is out of blast.

With the resumption of active operations by the rolling mills and steel works, inroads should be made on the stocks of pig iron in Western Pennsylvania from this time forward. The heavy demand for finished material should increase the consumption of pig iron by rolling mills and steel works far beyond the rate obtaining at any previous time this year. Western foundrymen are now so well supplied with orders for their products that they are taking more interest in the pig iron situation, and if the price should perceptibly stiffen from any cause there will be a rush to cover requirements until next spring at least. If furnacemen can only be persuaded not to blow in their idle stacks

until they can see an actual improvement in business, there would be good ground for expecting higher prices for coke iron in the near future.

Resisting the Coal Combine.

New Jersey has been heard from in opposition to the consolidation of the anthracite coal-carrying roads, and naturally there is a flurry all around. On Friday the fact was learned definitely that Chancellor McGill, on the application of Attorney-General Stockton, had enjoined the New Jersey Central and Port Reading railroads against operating under their recent leases. Something of the kind had been anticipated for several days, so that many contradictory reports gained a wide circulation. The petition upon which the injunction was issued alleges in substance that the offending parties were rival lines and that the consolidation violated the law of the State concerning monopolies. The probable effect of the Chancellor's decision immediately became a prominent topic, and it is noticeable that all the friends of the several railroads concerned hastened, as by a common impulse, to assure the public that whatever changes may be found necessary in their management, the coal trade will not be affected. There is a practical unanimity on this point. President Maxwell of the New Jersey Central, who is also vice-president of the Reading, says that "the coal deal, so called, is not affected by the decision. Everything will go on the same, just as it did before the lease was made. The traffic contracts still remain in force, and instead of there being one operating management there will be nominally two. That will be all. The case will be appealed to the superior courts." President McLeod of the Philadelphia & Reading Railroad Company reiterates this view, remarking that a simple change of management—President Maxwell of the Jersey Central resuming control of his own road—cannot have the effect of changing traffic arrangements in any way, the latter having been made at the time the leases were entered into to meet just such an emergency as that now precipitated. The railroad managers express confidence that the leases will be confirmed on an appeal to the higher courts. However this may be, the expectation is that pending legal proceedings the coal business will go on undisturbed. The production of coal, or, say, 70 per cent. of all the anthracite taken out of the ground, is controlled by the Reading Coal & Iron Company, and this concern, at least for the purposes contemplated, is supposed to be an independent commercial company doing business in accordance with law, and therefore not to be interfered with. In this view of the situation the alliance of the three roads—Jersey Central, Reading and Lehigh Valley—may be maintained, it is said, irrespective of the terms of the lease, though certain technical changes may be necessary in order to conform to legal requirements.

The language of the Chancellor is that the companies desist from operating their

railroads in the State of New Jersey in such manner, by combination or contract, as shall result in an artificial scarcity of coal or in the arbitrary increase of the price of such coal to the inhabitants of the State. In addition, the defendants are ordered to refrain from carrying into effect the lease or tripartite agreement. On the part of the railroads, the contention is made that even though it should be decided that the lease violates the law regarding monopolies, a contract which is just as binding upon both roads can be entered into so as not to impair the advantages that now accrue from the lease. But those who are not versed in legal devices are unable to discover how any contrivance designed to nullify or evade the injunction does not necessarily involve contempt of court, to be followed by the penalties of such action.

Shipbuilding on the Lakes.

The resumption of activity in lake shipbuilding has been casually referred to in our columns. The statement is now made on good authority that the vessels under contract to be built in the several yards for the season of 1893 will aggregate 47,100 gross tons. This is the largest tonnage ever under contract on the lakes in midsummer. More contracts are in sight, and the coming winter promises to be a very busy one in all the lake shipyards. This is good news to iron and steel manufacturers, as the day for wooden boats has almost passed. A few wooden vessels are among those under contract, but not many. The movement toward very large vessels was expected to interfere to a large extent with activity in shipbuilding, because fewer boats would be needed to handle lake freight, but the volume of business appears to be expanding in a corresponding rate with increasing vessel capacity. Large boats are more and more in demand, and next year there will be several afloat with a cargo capacity of 5000 tons or more. Small boats of slow speed may be displaced by these leviathans, not being able to compete at low rates of freight, but the large boats pay their owners so handsomely that more will be built until the business shows signs of being overdone.

A feature of this season's shipbuilding calling for special notice is the renewed attention given to vessels for passenger service. At one time there was a large business done on the lakes in the transportation of passengers over such long routes as between Chicago and Buffalo. For some reason, probably the improvement of railroad equipment and reductions in fares, this business was discontinued. It is again to be revived. Next year fine passenger steamships will run between Duluth and Buffalo and Chicago and Buffalo. The establishment of these lines has not been brought about by the World's Fair and the hope of heavy travel being created by that cause, but the steamship owners believe that a large part of the traveling public and summer tourists

would prefer a water route if first class accommodations were available. Should the initial ventures prove successful the lake marine will have many more additions in the way of exclusively passenger craft. We would be glad to see the bright prospects now opening up for the lake shipbuilders develop into a continued active condition of trade which will at least last long enough to make them forget their recent dullness.

CORRESPONDENCE.

Some Questions Answered.

To the Editor: Is it lawful to send a "dun," or a request for amount past due, on a postal card? Can a constable invade a place of manufacture in search of a man if armed with an ordinary warrant of arrest if same is against the wishes of employer? Is it as much correct to indorse payment on face of note as on back?

IGNORAMUS.

In answer to the first question, we would say that some doubt exists as to the application of the law as it now stands to any particular case. The office of the United States District Attorney in New York is of the opinion that the language of the statute is so vague and general that no indictment could be found unless the words on the postal card were so grossly libelous and defamatory that they could be clearly brought within the provisions of the act of Congress. The act of September 26, 1888, provides that any language, or design, or drawing, &c., on the outside cover of a letter or on a postal card shall render the letter or postal card unmailable if the language be of a "libelous, scurrilous, defamatory or threatening character or calculated by its terms and obviously intended to reflect injuriously on the character or conduct of another." The offense of attempting to mail such matter or actually mailing it is punishable by a fine of not more than \$5000 or by imprisonment of not more than five years, or both, in the discretion of the judge. It would appear from this that a mere demand by a creditor of a debtor for the payment of a debt is lawful. Such a "dun" is permissible, but if the demand be couched in threatening language it is unlawful. Further, if the language be of a kind which might not be threatening but is calculated to reflect injuriously on the conduct of the debtor (and it would make no difference what his conduct may have been for the purpose of the statute), then the act of mailing would be unlawful and punishable. Thus it has been held that collection agencies which used postal cards headed by large printed letters "Agency for the Collection of Bad Debts," violated the law by mailing demands for payment of debts under such heading. Such postal cards are likely to injure a man in his business and reflect on his character. But a mere "dun" or request for payment written on a postal card is clearly lawful.

2. A sheriff or his deputy or a constable has in some cases a right to enter the house or place of business of any person or corporation and arrest a person on the premises, provided the officer is armed with a warrant for the arrest of such a person. But the warrant must be one which is based on a criminal charge. An order or warrant of arrest in a civil action cannot be served by violence. The sheriff or constable cannot break through the doors or enter the premises of a citizen to execute such a writ against the consent of the owner or proprietor or lessee of the premises. If he does he is liable for tres-

pass or assault. If he does secure entrance without force and make the arrest he can lawfully take his prisoner out in spite of any protest by any one. But an officer of the law, with a warrant for the arrest of any person charged with crime, has a right to seize his man wherever he can find him, and to go for that purpose wherever he thinks his man is, and to use all necessary force to get to him, even to the extent of taking the life of any one opposing him. The public safety demands that individual rights should give way to the law and its execution. A man's house ceases to be his castle in the face of a criminal warrant against a possible inmate.

3. It is not "as much correct" to indorse a note on its face as on the back. The word "indorse" is derived from two Latin words and signifies literally "on the back." The word, of course, has a popular signification beyond its literal meaning, but it may be safely said that indorsements should be, as they almost always are, made on the back of the note. The fact that the indorsement is made elsewhere would be regarded as suspicious and doubtful by any bank, and would cause trouble and possibly loss or litigation.

But it is, nevertheless, legal to indorse a note on its face, so long as the name of the indorser is written upon it. A person who writes his name on the note, face or back, intending to indorse the same, is liable as an indorser. The only question is as to the intention of the person who signs his name. An indorsement has been held good even where the name was written under the name of the maker on the face of the note. The initials of the person intending to indorse are sufficient as an indorsement to hold him liable or to transfer the title of the note, even if written on the face. This is unquestionably the law and has been directly so held in England, Mississippi, Georgia, Illinois, Vermont, New Jersey and Pennsylvania. There are no contrary decisions to be found in the law reports of any State.

A Good Step for Cleveland.

At a time when there is the keenest inter-town competition for new enterprises, with bonuses, citizens' promoting committees, free sites, allotment sales to raise locating funds, and other attachments of latter-day town building, it is the part of wisdom for large cities to keep pace with the enterprise of their smaller sisters. Cleveland has taken a good step within the week in providing, by the pledge of \$100 each by 52 manufacturing and commercial firms, for a salaried officer, who shall give his entire time to the promotion of Cleveland's industrial and business interests. The plan as outlined by W. M. Day, chairman of the Board of Trade's Committee on the Promotion of Industry, contemplates no mere statistical or clerical routine for the new officer. At the salary of \$5000 which it is proposed to pay, a man is to be secured who will be thoroughly representative of Cleveland's important interests. He will be able to take the initiative in the location of new industries; to spread a knowledge of Cleveland's industrial advantages; to look after the question of freight discriminations; to assist in building up transportation facilities; to study tax questions, and keep business men informed on pending legislation on this line; to keep in touch with movements in other cities for industrial advancement.

The contract is a large one, but when the man to undertake it is found and set to work, there is no question that a large return on the investment will come, and that the merging of boards and clubs and committees, that the new plan makes possible, will bring the strong pull all together that is indispensable to the largest development.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 30, 1892.

The chief of the construction, engineering and ordnance bureaus, in conference with the Secretary of the Navy, have been discussing the subject of the future work and progress in the increase of the navy. The estimates are being prepared for the next fiscal year, 1893-94, which will be transmitted to Congress in December and which will go into operation on July 1, 1893. These will provide according to the schedule now under consideration for one additional battleship. It has been proposed, as a settled policy, that at least one armored battleship should be authorized and commenced each year, so that a number of these formidable craft, which require three and four years in construction, might be well under way and in case of emergency could be hastened to completion. It is expected that 1893 will see the first of these mighty floating fortresses put in commission and thereafter one will be completed yearly.

A subject which is enlisting much attention just now in naval circles is the construction of vessels for special service and to have certain relation to the class and duty of vessels already built. A statement has been submitted to the Secretary of the Navy proposing a recommendation to Congress authorizing the construction of a number of 2000-ton sheathed vessels specially adapted to service in the Pacific. The service in these waters requires fast vessels of a lighter tonnage than on the Atlantic, on account of the number of islands and extensive foreign coast service. This class of vessels is peculiarly adapted to this work. It is claimed for them that in time of peace they would make economical cruisers, and in time of war could be utilized to better advantage than the cruisers of the largest type in the Pacific service.

The schedule of vessels to be asked from the closing session of the present Congress will have reference simply to the continuance of the increase of the navy. The result of the elections will have more or less to do with the number to be authorized. Should the Republicans carry a majority in the House the Senate project for a general system of naval construction to cover a series of years will be renewed and passed. If not the navy will be compelled to accept the best they can get.

The beneficial effects which the liberal policy of Congress for the past six or eight years has had upon the iron and steel trade is conceded. A diminution of the authorization of new work would, it is believed, soon be felt in this most important branch of industry.

The complete ordnance outfit for the Monterey at San Francisco has been shipped from the Washington Gun Foundry. One of her two 12-inch guns was shipped when her completion was being hastened in order to share in the possible naval conflict with Chili. The second of her 12-inch guns, her two 10-inch after turret guns, the mounts and hydraulic machinery for working these monster guns, together with a full complement of projectiles and powder, made up the warlike cargo.

The train consisted of one enormous car specially built by the Pennsylvania Railroad Company for the transportation of this size of gun for the Navy Department, two cars for the two 10 inch guns and four for the rest of the outfit.

The shipment of heavy guns will be very brisk for the next year in order to meet the requirements of the new ships which will be completed.

The Bellaire Scale.

As we announced last week, the Bellaire Nail Works, Bellaire, Ohio, have signed the steel scale and their Bessemer plant is now in full operation. This firm was granted a reduction of 15 per cent. over their old scale of 1891-92, being the same reduction conceded to the Laughlin & Junction Steel Company of Mingo Junction, Ohio, whose scale was printed in *The Iron Age* of last week. The plant of the firm includes a nail factory, containing 125 nail machines, but as these have been idle for some months past their entire product of billets, which amounts to about 8000 tons per month, is sold in the open market. In the steel scale as signed by the Bellaire Nail Works, the first four paragraphs are identical with those appearing in the scale of the Hainsworth Steel Company, which was printed in our issue of last week. The balance of the scale is as follows:

BLOOMING MILL.

Position.	Number employed.	Rate per 100 tons, 2240 pounds.
Heaters, each.....	2	\$4.11
First helpers, each.....	2	2.55
Second helpers, each.....	4	2.07
Furnace firemen, each.....	2	2.07
Roller.....	1	4.11
Reversing engineer.....	1	2.55
Roll hands, each.....	2	2.34
Ingot manipulator.....	1	2.34
Shearman.....	1	3.00
Shearman's helpers, each.....	4	2.07
Shear butt wheelers.....	1	1.70

It is understood:

1. For each change of rolls the full crew shall be ordered out and the company agree to pay each of the crew 100 tons at the respective scale price for each change.

2. The company also agree to furnish a man to do all oiling and greasing on rolls and shears.

3. They also agree to pay furnace fireman 100 tons at scale price for heating steel on Sunday night.

4. It is also agreed if less than 4 x 4 is rolled on blooming mill, that a special price shall be made for such sizes.

CONVERTING DEPARTMENT.

Position.	No. employed.	Rate per 100 tons, 2240 pounds.
Metal wheelers, each.....	9	\$1.67
Coke wheelers, each.....	2	1.54
Bottom maker.....	1	2.20
Bottom maker's helper.....	1	1.84
Stopper maker, total tonnage.....	1	.84
Cupola foreman.....	1	3.24
Cupola foreman's helper.....	1	1.98
Cinder tapper.....	1	1.50
Manganese furnace foreman.....	1	2.55
Manganese furnace foreman's helper.....	1	1.50
Vessel foreman.....	1	3.18
Vessel foreman's helper.....	1	1.98
Cinder wheelers, each.....	3	1.93
Vessel scrappers.....	1	1.75
Steel pourer.....	1	3.18
Stopper setter.....	1	2.41
Stopper carrier.....	1	2.41
Pitmen, each.....	6	2.53
Iron and steel crane manipulator.....	1	1.93
Pit crane manipulator.....	1	1.93
Sander, when sand is used.....	1	2.53
Sander, when caps are used.....	1	2.12
Ladle foreman.....	1	2.18
Ladle foreman's helpers, each.....	2	1.47
First regulator.....	1	1.93
Second regulators, each.....	2	1.47

It is understood:

1. That the cupola foreman and helper shall receive 100 tons allowance for work of fixing cupola, and when two or more cupolas need fixing, one additional helper shall be given.

2. The company further agree to allow coke wheelers 50 tons for filling cupolas on Sunday.

3. That the company further agree to pay all tonnage men 100 tons for all repairs. Twelve hours or less constitute 100 tons.

4. It is also agreed that the vessel foreman's helper and first regulator shall each receive 100 tons credit at scale price for fixing vessel when done off regular turn; this fixing turn to be limited to 12 hours or less, and that one helper shall be given time and one-half at laboring price, and that all nose brick be put in by bricklayer, and that all mud, stone, wood

and coke be delivered on stand by extra hands, and that each turn fix their respective vessels, and when the time exceeds 12 hours, foreman's helper and first regulator shall receive 8¼ tons for each additional hour, and when ordered out to scull out, reline and face, foreman and helper to receive 200 tons at scale price, and that two helpers receive two days at laboring price, and first regulator receive 100 tons at scale price, and that all mud, wood and coke be delivered on the stand.

As we intimated last week, the Columbia Iron and Steel Company of Pittsburgh, with works at Uniontown, Pa., have also signed a steel scale and their entire plant is now in operation. The firm manufacture Bessemer billets and structural material, and have sufficient orders on hand to keep them fully employed for several months. It is reported that they were granted a reduction of 25 per cent. in the converting department and 12½ per cent. in the blooming department.

PERSONAL.

Jos. L. Hunter, superintendent of the American Bridge and Iron Company of Roanoke, Va., has sold out his interests in that concern, and will take charge of the blast furnace and machine shop at Covington, Va.

John I. Kennedy, formerly of Birmingham, Ala., has been engaged since June 1 as furnace manager of the New Glasgow Iron, Coal & Railway Company, Limited, at Ferrona, Pictou County, Nova Scotia. The furnace was to blow in on the 25th ult.

Alexander Dieterich, Chief Constructor of the German Navy and Privy Councillor to the German Admiralty, is in this country on a tour of inspection.

The autumn meeting of the Iron and Steel Institute will be held at Liverpool on Tuesday, Wednesday and Thursday, September 20, 21 and 22 next. The programme will embrace visits to the Liverpool docks and warehouses, to the overhead railway now in course of construction, to the principal ocean steamships in the docks, to the Mersey Aqueduct Tunnel Works and Norton Water Tower, to the Manchester Ship Canal Works, the ship-building works of Messrs. Laird, at Birkenhead, and probably to other works in the district round about Liverpool. The following is a list of papers that are expected to be read and discussed: 1. "On the Condensation of Ammonia from Blast Furnaces." By Sir Lowthian Bell, Bart, F.R.S. 2. "On Alloys of Iron and Chromium." By R. A. Hadfield, Sheffield (including a report by F. Osmond, Paris). 3. "On the Siemens-Martin Process in Austria." By Paul Kupelweiser, Witkowitz. 4. "On Failures in the Necks of Chilled Rolls." By Chas. A. Winder, Sheffield. 5. "On the Walker Engineering Laboratories at Liverpool." By Professor Hele-Shaw, Liverpool. 6. "On an Appliance for Autographically Recording the Temperature of Furnaces." By Professor Roberts-Austen, C.B., F.R.S., London. 7. "On the Liverpool Overhead Railway." By J. H. Greathead, M.I.C.E., London. 8. "On Sulphur and Iron." By J. E. Stead, Middlesbrough.

The Thomas Iron Company have just lost another one of their directors through the sudden death, at Schooley's Mountain, N. J., of C. C. Marsh. A stockholders' meeting will be held on the 13th inst., when the vacancy created by the death of B. G. Clarke will be filled. It is probable that E. C. Knight of Easton, Pa., connected with the company for many years, will be elected president. The company will probably be represented in New York only by a selling agent.

Affairs at Homestead.

On Monday, August 29, it was just two months since the Carnegie Steel Company, Limited, closed down every department of the Homestead Steel Works, on account of the refusal of the workmen to accept the wage scale proposed by the firm and which was to take the place of the old scale that expired by limitation on June 30 last.

The members of the famous Advisory Committee have known for weeks that they were making a hopeless fight, and that many of them have committed acts of lawlessness which will forever bar them from entering the employ of the Carnegie Steel Company, Limited, in any capacity. Notwithstanding all this, they continue to represent to these misguided men that if they will remain idle for a while longer the fight will be won. In view of the fact that every department of the Homestead Steel Works is now in operation, and many of the departments on double turn, these men have no one to blame but themselves if they still persist in remaining idle while there remains a chance for them to resume work. The firm have stated right along that there are many of the men who are now idle who would be given work by making application for it, and it is possible that it is not yet too late to take advantage of this offer. There is one thing that the strikers at Homestead would do well to remember, and that is that under no circumstances will any man now at work in the Homestead Steel Works be discharged to make room for another, so long as his work proves satisfactory to the firm. This has been stated by the chairman of the Carnegie Steel Company, Limited, in terms that cannot be mistaken, and this policy will be adhered to without deviation.

As stated above, every department of the Homestead Steel Works is now in full operation, and on Monday, August 29, there were 2300 men at work. The erection of company houses by the firm for the accommodation of their employees is going on rapidly, and already a large number have been completed and occupied. These are being built on the old Poor-Farm site, which lies between Munhall and Homestead, and which was purchased by the firm two or three years ago. The workmen are still subjected to annoyances by the strikers, and it is almost a daily occurrence to hear of some workman having been attacked and beaten. A number of such cases as these occurred last week, but in nearly every instance the guilty parties escaped arrest.

At the Upper Union Mills, at Pittsburgh, every department is in full operation on double turn, and the class of material turned out is pronounced by inspectors to be highly satisfactory. The Lower Union Mills have not yet been put in operation, but a start will probably be made during this week. No attention is being given the Beaver Falls Mills by the firm, and the impression is growing that this plant will never again be operated by the Carnegie interests.

J. A. Emerick & Co. and J. W. Paxson & Co., manufacturers of foundry supplies, of Philadelphia, have been consolidated, J. A. Emerick having disposed of his interest, while Howard Evans of the former enters the latter firm. J. W. Paxson & Co. is now composed of J. W. Paxson, J. K. Bougher, A. Burton Paxton, Howard Evans and Howard M. Bougher.

The railroad agents at Birmingham, Ala., have been advised that the usual rise in pig-iron rates, which takes place October 1, will not go into effect, but the present rates will continue until October 31. This is on account of the depressed condition of the iron market.

OBITUARY.

JOHN C. TUCKER.

John C. Tucker died at his residence, 34 West Fiftieth street, New York, on Friday evening, August 26, in the eightieth year of his age. Mr. Tucker was born in this city in 1812, in a house located where the Equitable Life Assurance Building now stands, and in 1827 entered the Hardware store of Wood & Van Wagenen, corner of Dey and Greenwich streets, as a clerk. In 1834 he was admitted as a partner, the firm becoming Van Wagenen & Tucker. At the death of his partner in 1850 Mr. Tucker took the business in his own name and continued until 1853. In 1853 the firm became John C. Tucker & Co., by the admission of two of his clerks, and so continued until 1861, when he retired from business. In 1868, however, he again entered the jobbing business under the firm name of Tucker, Sears & Co., but retired from the firm in less than two years. A portrait of Mr. Tucker was given in *The Iron Age* of February 18, 1892, as the oldest hardwareman then alive in New York; and soon afterward he occupied an honored place as guest at the hardware dinner. For many years he has been an officer in the Brick Presbyterian Church, and was known as an active and influential man in philanthropic and religious work. In business he was regarded as a cautious and conservative man, kindly in disposition, and sustained an irreproachable character for honesty and integrity.

Mr. Tucker acted as a delegate to the recent Presbyterian General Assembly at Portland, Ore., but was taken sick soon after his return, from which illness he never recovered. He leaves a wife, son and daughter. The funeral services were held at his late residence on the morning of August 30, the burial being in Greenwood Cemetery.

An Inclined Passenger Elevator.

—An exhibition was given on Friday at the Columbia Iron Works, in Brooklyn, of a new passenger-elevator contrivance. It is in the shape of an inclined platform, the movement of which is continuous, like the chain buckets in a grain elevator. The passengers step on this platform, which can be made to move at any desired speed, and, taking hold of a movable handle, they are carried to the top, where an automatic contrivance gently forces them to step off. The device is intended for short ascents, like those found at the bridge, elevated railroads and railway stations, where big crowds are to be transported. It is said that one of the elevators will be put in at the Pennsylvania Railroad station at Cortland street.

The funeral of Benjamin G. Clarke, president of the Thomas Iron Company, who died in Antwerp, Belgium, August 12, was held on Saturday at his late residence, at 326 Madison avenue. There was a large attendance at the funeral. The pall bearers were Messrs. Pyne, Dodge, Crockery, Ryker, McDonald, Huntington, Hardenborough, Sloan, Gray and Major Bent. The body was forwarded to Easton, Pa., for interment.

The Illinois Mining Institute met at Springfield, on the 23d and 24th ult. Among other business transacted a resolution was adopted that the institute procure the records of borings for all the shafts in the State as far as possible, in order to secure definite information regarding the geological formation.

The blooming mill of the Otis Steel Company of Cleveland, which has been undergoing remodeling during the past three weeks, has started again.

The Colorado Consolidation.

Negotiations which have been pending during the past six months for a consolidation of the coal and iron properties of the State of Colorado were practically concluded in this city last week and will now go to stockholders for final approval. The various interests have been anxious for a consummation of the plan for a number of years, and at the commencement of the present movement all gave their hearty support. It was in this way that the laborious task of valuing the various properties and other resources of the company was greatly facilitated. Experts made a minute examination of the properties, placed the valuations thereon and then reported to a committee which met in Colorado. This body arrived at a basis which it agreed to report to a meeting of controlling interests which was to be held in New York. These sessions began over ten days ago, and up to the last of last week there was a disagreement as to certain points involving valuations and the management of the different properties. On Saturday the following plan was announced as having been adopted by these interests, and that it would be referred to stockholders for final approval:

The consolidated company will have \$6,000,000 of authorized bonds, of which \$4,244,000 will be required to offset bonds of the old companies, leaving \$1,756,000 in the treasury.

The capital stock will consist of \$2,000,000 of preferred and \$11,000,000 of common. The preferred will go to the Colorado Fuel Company's stockholders. Of the common \$9,250,000 will go to the stockholders of the old companies and \$1,750,000 will remain in the treasury.

Stocks and bonds issued on account of the Consolidation: Bonds, \$4,244,000; preferred stock, \$2,000,000; common, \$9,250,000; total, \$15,494,000.

The companies concerned in the consolidation are the Colorado Coal & Iron, Colorado Fuel, Grand River Coal & Coke, Denver Fuel, and the Huerfano Land Association.

The agricultural and town-lot property and the Colorado Coal & Iron Company are not included in the consolidation, but will go to a separate organization, whose stock will be given to the Colorado Coal & Iron Company's stockholders.

The plan, as given above, is complete, with the exception of the basis of exchange of the securities of the various old companies for the \$9,250,000 of common stock of the new company. From advance information we can state that the Colorado Coal & Iron Company's stock, now selling at about 39, will be exchanged for the new stock at par. Our informant states that the stock, from the dividend-earning standpoint, is worth about 60, against its present price of 39, and that it will reach that point this year. He regards the preferred stock of the new company as valuable as an 8 per cent. stock preferred can possibly be. The savings by the operation will be something enormous. It is said on good authority that \$100,000 will be saved each year on salaries, \$200,000 on mine operation, and that the total in savings for the first year will be about \$350,000, all of which will be applicable to dividends. In figuring up the revenue of the new company, the income from the steel plant of the Colorado Coal and Iron Company was placed at \$50,000 per year. Inasmuch as this was the actual earnings last year, during which time the capacity of the plant was increased 100 per cent., and its markets enlarged to about the same extent, it is claimed that its revenue will be about \$200,000 per year net.

The organization must be complete and in effect by November 15. President Osgood of the Colorado Fuel Company is

to be the president of the new company, and its officers will be about the same as those of the fuel company.

Wall street looks very kindly upon this consolidation, reflecting its feelings in quite a pronounced advance in the stock since it has been pending, and is now prophesying much higher values.

MANUFACTURING.

Iron and Steel.

The rolling mill department of the Vulcan Iron Works, at Buena Vista, Va., has resumed operations after a shut down for repairs. The white workmen refusing to work at the reduced scale offered, their places were filled with colored laborers.

Since the reorganization of the Southern Malleable Iron Company, Chattanooga, Tenn., Capt. J. M. Elliott of Covington, Ky., the newly elected president and general manager, has assumed charge of affairs. Captain Elliott is an old iron man, and has been connected with several big concerns in Cincinnati.

Chancellor McGill has appointed President Chas. B. Thurston of the Jersey City and Bergen Railroad, receiver of the Virginia, Tennessee & Carolina Steel and Iron Company. The statement of President John T. Haskill, made in May last, shows that the company own valuable coal mines on Dumps Creek, in Buchanan County, Va., and have purchased an option on the Campbell and Carter grants, in Wise and Dickenson counties, Va.

Under date of August 24, the Alabama Rolling Mill Company, at Birmingham, Ala., manufacturers of merchant iron of all kinds, advise us that the recent labor troubles at their plant have been adjusted, and that they will resume full operations on Monday, September 5, next. The firm state that they have the most modern and thoroughly equipped mill in the South, and are fully prepared to execute all orders promptly.

The Curtiss Steel Roofing Company of Niles, Ohio, expect to have their plant ready for operation in several weeks. This is a new concern organized at the above place some time since.

In pursuance of recent consolidation arrangements between a number of spring companies, the Cleveland Spring Company of Cleveland, Ohio, have deeded their plant to the Columbia Spring Company, whose headquarters are at Cincinnati, Ohio.

The Wm. Anderson Company of Pittsburgh have been granted a charter of incorporation, with a capital stock of \$100,000, for the purpose of engaging in the manufacture of iron and steel.

Last week the Ellwood Steel Company of Ellwood, Pa., were granted a charter with a capital stock of \$100,000. As already stated in a previous issue, this concern propose to put up a very extensive plant for the manufacture of steel sheets and have given the contract for the erection of the mills to the Leechburg Foundry and Machine Company of Pittsburgh.

All departments of the Pittsburgh Iron Works of the J. Painter Sons Company at Pittsburgh are now in full operation, with the exception of the puddling department. This department contains 67 single puddling furnaces and is still idle, with no prospects of an early resumption. This firm for some time past have been using Bessemer steel billets almost exclusively and have had under consideration the erection of a Bessemer plant. No definite action in the matter, however, has yet been taken.

Mary Furnace of the Ohio Iron and Steel Company, Lowellville, Ohio, has recently been relined and enlarged and otherwise improved. The furnace went in blast last week.

The Douglas Furnace Company have leased one of the Douglas furnaces at Sharpville, Pa., formerly operated by Pierce, Kelly & Co. Fire was started in the stack on Saturday last. This company is a new organization, established for the purpose of operating the furnace. Forsyth, Hyde & Co. of Chicago are interested and will sell the product. The furnace will be run on foundry iron, to be marketed in Ohio and the East.

The Gadsden (Ala.) Iron Company will close down their large blast furnace September 1 for an indefinite period, throwing a large number of men out of work.

The Muncie Nail Company's nail mill, at Muncie, Ind., was destroyed by fire on the night of the 26th ult., 48 machines for the manufacture of cut nails being ruined. The loss is reported to be about \$100,000, half of

which is covered by insurance. The puddling department was saved, as it was outside of the main building.

The syndicate which recently purchased the assets of the Sheffield (Ala.) Land, Iron and Coal Company, and assumed their indebtedness, met at Sheffield last week and elected the following officers: J. C. Neely of Memphis, president; Robert Looney, Memphis, manager; M. A. Spurr of Nashville, treasurer; J. V. Allen, Sheffield, secretary; J. B. Sprunance of Sheffield, assistant secretary. The company organized as the Sheffield City Company.

The Bristol Furnace at Bristol, Tenn., was placed in the hands of a receiver last week. Hon. J. I. Cox was appointed. Cadwallader & Co. of Pulaski asked for the receivership, the object being to get matters in such shape that the furnace can resume operations September 1.

Wilkie, Bothwell & Co., Limited, engineers and contractors, Times Building, Pittsburgh, Pa., are engaged in repairing and remodeling the Bird Coleman furnace plant at Cornwall, Pa., owned by the Cornwall Furnace Company, Limited. The same firm are also erecting a large sulphur flue, 10 feet in diameter and 40 feet long, to carry off the sulphur fumes from the 28-inch ore roasters. This firm have also received a contract for repairs to be made to the Robesonian furnace of the Robesonian Iron Company, Limited, at Robeson, Pa., which will be started sometime after September 1, at which date the furnace will be blown out. These repairs will include relining of the stack and rearrangement of the bosh and alterations in the boiler setting.

C. M. Schwab, general superintendent of the Edgar Thomson Steel Works of the Carnegie Steel Company, Limited, recently inaugurated a new scheme to stimulate the workmen to put forth their best efforts. Mr. Schwab proposes hereafter to give prizes of \$20 each month to the scraper, pourer, blower and heater on whose turns the least number of second-class rails are produced. It is claimed that this plan has been tried before with excellent results.

The Oliver Iron & Steel Company of Pittsburgh, who operated the Rosena Furnace, at New Castle, Pa., for a number of years under lease, are now endeavoring to purchase the plant. Negotiations have been going on for some weeks past, and in all probability the purchase of this plant will be effected at an early date. As is already known, the Oliver Iron & Steel Company purchased last year the Edith Furnace in Allegheny, Pa., and spent a large amount of money in remodeling the furnace, so that it is now one of the best equipped in the Pittsburgh district.

At Pittsburgh, on Saturday, the 27th ult., the petition filed by Isaac W. Frank and Edward Kneeland asking for the appointment of a receiver for the Lewis Foundry & Machine Company of that city was denied. The courts, however, granted a preliminary injunction restraining the concern from purchasing stock in a steel company, \$40,000 having been set aside for that purpose some time since.

On Saturday, the 27th ult., the Pittsburgh Forge & Iron Company of Pittsburgh signed the Amalgamated Association scale. It will be remembered that this firm was represented at the conferences held between the Pittsburgh manufacturers and the Amalgamated Association, but declined to accept the scale as agreed upon several weeks since. However, the firm have made satisfactory arrangements with the Amalgamated Association, and their plant started up on Monday morning, the 29th ult. The plant of the concern consists of 38 single puddling furnaces, 14 heating furnaces, 4 trains of rolls and 11 hammers, the product being largely in the nature of railway supplies, the annual capacity being 29,000 net tons.

Some time since representatives of the Amalgamated Association made overtures to the Catasauqua Mfg. Company of Catasauqua, Pa., with a view of ending the disputes which have existed between the firm and that organization for a long time past. These compromise proposals were opened by the Board of Directors of the Catasauqua Mfg. Company last week and were rejected. Oliver Williams, president of the Catasauqua Mfg. Company, has made the following statement regarding this matter: The Catasauqua Mfg. Company will not employ any man who is connected with the Amalgamated Association. The company will not employ or confer with their late employees as a body. The only way they can obtain work, if at all, is by applying individually for a situation, and then only after withdrawing from the labor union. This statement has been read to a full meeting of the Board of Directors, held this day, and unanimously approved.

The rolling mill at East Chicago, Ind., formerly operated by the National Forge & Iron Company, which failed a year ago, will

again be put in operation by a new company. The work of repairing has already commenced, and the plant will be in operation at an early date.

Conestoga furnace, operated by Peacock & Thomas, at Lancaster, Pa., has shut down for an indefinite period.

The Metropolitan Rolling Mills, at Montreal, Canada, have been destroyed by fire at a loss of \$75,000.

Machinery.

The Midvale Steel Company, Nicetown, Philadelphia, are making a notable addition to their extensive plant, in a new machine shop now being erected. The company have recently purchased 40 acres of ground adjoining the present works, which they propose utilizing for extensions. The new shop is calculated to afford the necessary facilities for carrying on the heavy Government work, of which so much is now allotted to this company. The dimensions of the building are: Length, 200 feet; width, 112 feet; height, 75 feet clear. Room is left for extending its length some hundreds of feet more as required. It will contain two Shaw electric cranes, one of 50 tons and the other of 30 tons capacity, with a lift of 50 and 30 feet, respectively. All the heavier tools required in gun work, of which there will be a very complete line, will be housed in this building. Among the most important are the following: One 90-inch lathe, 50 feet between centers, an exceptionally large tool; one 66-inch lathe, 65 feet between centers; one double headed 48-inch and one single-headed 40-inch lathe, 30 feet between centers, and one single-headed 60-inch lathe 50 feet between centers; a 54-inch slotter and six 20-inch slotters; two large planers, one 8-foot and one 48-inch; also, a 36-inch shaper. A special gun-boring machine for operating 12-inch guns; an ingot blowing machine for boring 45 to 70 inch octagon ingots, each weighing from 40,000 to 120,000 pounds. This machine was designed at the works, and will be one of the largest tools of its class in existence. It will weigh about 170 tons. In addition to these monsters, a 102-boring mill will be added, having three boring bars, 84 inches under the saddle. This tool, which is intended for boring out heavy guns, will have a maximum actual thrust of 285,000 pounds, boring a 24-inch hole in the solid. The torsional stress of the three bars will be about 160,000 pounds. This will be another mammoth machine which will have few rivals. Besides these heavy tools, the new shop will contain a number of smaller lathes and other tools, many of home design, adapted for special purposes; while it is contemplated to add a number of other very heavy machine tools, mills, &c., within a short time. The shop will be lighted by incandescent and arc lamps, and special attention has been paid to its efficient heating and ventilation. By present calculations it should be ready for occupation by January 1 next. A number of further additions and improvements are in hand in the various departments of the Midvale Steel Company's works, and are all being rapidly pushed forward. Great activity prevails throughout the establishment, large contracts for the Government and private parties being on hand and others pending. The Government work includes a quantity of guns and projectiles, ship castings of all kinds, gun carriages, &c., for the Army and Navy departments. A contract for about half a million dollars' worth of projectiles alone is, we understand, now on the books of the company, and to this line of manufacture they are now devoting very special attention. It is stated that over 1000 pieces of ordnance of various types and calibers have now been made for the Government arsenals at the Midvale works, including heavy rifled guns, smooth bores, howitzers, boats' guns, machine guns, mortars, and almost every description of these weapons now in use.

J. W. Foley & Co., Cincinnati, Ohio, advise us that they recently received an order from England for a carload of 40,000 pounds of their pulleys, hangers and flat journal boxes, the order being secured in the face of strong competition, both from English foundrymen and those located in the United States. The purchasers finally decided to use the company's productions, on account of their practical design, strength and durability. The order was shipped last week.

The Standard Mfg. Company, Hartford, Conn., are now settled in their new factory, 79-83 Woodbine street, and will start up September 1. The new building is 135 x 40, with an L 50 x 35, and is constructed of brick and iron.

Finney & Rhodes, Hartford, Conn., are putting on the market a new 14-inch Gibb taper lathe, which embodies several new features of importance, and is sold at a moderate price.

Owing to the increased demand for their chain elevating and conveying machinery, as well as their detachable and special chains, the Jeffrey Mfg. Company of Columbus, Ohio,

have found it necessary to carry a stock of chains, sprocket wheels, boots and other specialties in the East, and have therefore arranged for office and ware room at 163 Washington street, New York City, which is located between Cortlandt and Liberty streets. The works of the Jeffrey Mfg. Company are located at Columbus, Ohio, and consist of a plant of over 5 acres, most of which is covered by substantial buildings necessary for the manufacture of their machinery. They have now in course of erection a three-story brick shop, 50 x 140, and an additional warehouse, 40 x 170.

The Keystone Engine Company of Williamsport, Pa., have been chartered, with a paid-up capital of \$10,000, for the manufacture of a new rotary engine. The company are about to erect the necessary plant.

The Bogart Engine Company, at Covington, Ky., will enlarge their plant and erect a factory 40 x 200 feet.

The Iron City Foundry and Machine Company have been organized at Jefferson, Texas, with a capital of \$25,000, to make castings, machinery, &c. George W. Brown and associates are the incorporators.

Jenkins & Lingle of Bellefonte, Pa., have just completed the outfit for the Mann Edge Tool Company, Lewistown, Pa., consisting of trip hammers, grindstone fixtures, polishing wheels and spindles, &c. They have also made two forging presses weighing 10 tons each, and a heavy machine weighing 12 tons, to be used for punching the eyes in axles and similar tools. This machine is of new design, the invention of Mr. Jenkins, and before shipment was subjected to a thorough trial. The result of the test was entirely satisfactory to all concerned, the machine punching a clean, straight, smooth eye through the solid blank, at the same time compressing and roughly forming the blank into the desired shape, thus obviating the necessity of folding and welding the blank, as formerly done. In addition to the above this firm is furnishing ready for shipment to various parties six cushioned power hammers, and are making considerable mining machinery. They have also a good sized contract for castings for Pennsylvania State College new engineering building.

The Solid Steel Company of Alliance, Ohio, are erecting a large engine and boiler house in which all their engines and boilers will be concentrated.

The Youngstown Car Company, of Youngstown, Ohio, recently completed the erection of a large foundry, and the first heat was poured last week with very satisfactory results. This concern are at present engaged in the construction of a large number of new cars for the Pittsburgh & Lake Erie Railroad.

Westminster, Pa., is anxious to have a foundry and machine shop located there, and its citizens express a willingness to take stock in such an industry.

R. S. Newbold & Son of Norristown, Pa., are building a new foundry and stock house in connection with their present plant. The foundry will be 50 x 100 feet in size, and the stock house 26 x 80 feet.

A. Wrenn & Son's machine shop at Berkeley, Va., has been destroyed by fire. The structure was 250 x 80 feet, three stories high.

The S. Obermayer Company, dealers in foundry supplies, Cincinnati, Ohio, are distributing blotters calling attention to their plumbago or India silver lead. They state that their qualities will admit of being "slicked" in the finishing of a mold, and will neither burn nor run before the iron at the time of pouring; it adheres firmly to the surface of the mold and "peels" well from the casting, giving it a bright, smooth, uniform color.

The Knowles Steam Pump Works at Warren, Mass., are running night and day to keep up with orders. A stock room 50 x 25 feet, two stories high, is in course of construction.

The Technological School at Atlanta, Ga., will spend \$15,000 in purchasing working tools and machinery for its new machine shop which is to take the place of the one destroyed by fire some months since.

E. Keeler Company, West Branch Boiler Works, Williamsport, Pa., are making an addition to their plant in the shape of a new two-story building for storage and office purposes, 40 x 50 feet. This has been found necessary, as the company have lately been making considerable extensions in the direction of steam fitting, engine supplies and steam heating apparatus of all kinds. A very good business is reported, particularly in the line of boilers for use within a 100 mile radius of the manufactory at Williamsport.

Wm. Tod & Co., Youngstown, Ohio, are building the engines for the new tin-plate plant now under construction by the Falcon Iron & Nail Company, at Niles, Ohio. The hot rolls will be driven by a 36 x 48 inch engine geared to the trains, and the cold rolls

by a 28 x 42 inch engine direct. These engines are of the same size used by the American Tin Plate Company of Elwood, Ind., but the arrangement will be somewhat different. Wm. Tod & Co. are also building a 30 x 48 Porter-Hamilton engine, with gearing, for the new sheet mill of the Ellwood Steel Company at Ellwood, Pa.

Last week the Robinson-Rea Mfg. Company of Pittsburgh, manufacturers of rolling-mill machinery, made a large shipment of rolling-mill machinery to the Lalance-Grosjean Mfg. Company of Pittsburgh, Pa. The shipment consisted of four 24 inch sheet mills, one 23-inch bar mill, two 30 x 60 inch and one 30 x 48 inch engines, with necessary shears, &c. The last named firm are large manufacturers of agate iron ware, and heretofore have been importing their steel sheets, but in the future will manufacture them. The mills shipped last week will be used for the manufacture of steel sheets for deep stamping.

The general Engineering Company have been chartered at Wheeling, W. Va., for the purpose of constructing and dealing in machinery of all kinds.

Henry Martin Brick Machine Mfg. Company of Lancaster, Pa., are putting up a large new plant in the western part of that city, their increasing business having rendered a move from their present quarters necessary. The new buildings will cover 4 acres, and are being constructed with a view to giving ample space for all departments of the manufacture. The company have now over 3000 of their brick machines in use in all parts of the United States and Canada, while they have just received an order for a complete plant, including tempering mills, stone crusher, clay elevator, sand grinding machine and all the necessary attachments, to be shipped to Laguele Chica, Cuba. This is the latest pattern steam-power machine, having a total weight of 15,000 pounds. Mr. Martin will also send a detachment of his workmen to Cuba to erect the plant. Another foreign order now in hand is one for a complete brick machine for Cape Town, South Africa, to be operated by animal power. The company have lately shipped 150 rack cars for drying bricks to Johnsonburg, Pa., for the Somerset & Johnsonburg Mfg. Company. Henry Martin is now engaged in perfecting the latest improvement to his machine, which will be shortly put upon the market. We learn that the business of the firm during this year has reached a point far beyond that of any similar period previously.

The National Water Tube Boiler Company of New Brunswick, N. J., have just completed a shipment of their boilers to the United States Electric Lighting Company, Washington, D. C. Fifteen large freight cars were required to transport the boilers. This steam plant will be a duplicate of that furnished the same company last year, and when erected the full boiler plant will be among the largest in use in electric lighting stations in the country.

Hardware.

The tempering shop and stables of the Champion Saw Company, at Beaver Falls, Pa., were destroyed by fire recently, causing a loss of \$3000, partially covered by insurance. The other departments of the plant continue in full operation, and there will be no delay in serving customers with the exception that shipments may be delayed for a week or so until everything is in shape again. The firm will rebuild the destroyed portions of their works just as soon as the losses are adjusted by the insurance companies.

The McMillan Sash Balance Company, Pittsburgh, have been incorporated, with a capital stock of \$4900.

Williamsport Staple Company, Williamsport, Pa., of which C. E. Krouse is the manager, inform us that their first year's business has been so encouraging that they are about to make some considerable additions to their plant in order to increase their producing capacity. The company make a full line of staples of all kinds, and belt works, as well as patent side-loop fasteners and other hardware specialties, for which they have found a very satisfactory demand. One of their specialties which has had a particularly favorable reception is a barbed bed spring or poultry netting staple, made of coppered steel wire, in several sizes.

The National Metal Edge Box Company are introducing their system of box making very largely among the hardware trade. They have recently introduced a line of their machinery in the different factories of the American Axe & Tool Company, Fayette R. Plumb, Toledo Bolt & Nut Company, Bryant Electrical Company and other large concerns in the hardware trade. This company manufacture patented paper-box machinery. The principal feature of their system is the shipment of boxes all cut, scored and cornered, ready to be

put together. The manufacturers simply require the fastening machinery for attaching the corners. By this system there is a great saving in room, and manufacturers can have their boxes at a moment's notice. The company have paper and pulp mills at Readsboro, Vt., which are said to be the largest of the kind in the United States, and have exceptional facilities in the way of water power and natural supplies for manufacturing purposes. They turn out 15 tons of finished stock daily, which is supplied to the lessees of their machinery throughout the country. The home office is at 621 Cherry street, Philadelphia, although most of their finished stock is shipped direct from the mill. The company own 19 patents in the United States and promise to fully protect all users of their system. In addition to the American Company there are companies operating the same system in Germany, France, Austria, England, Russia and Sweden, and all of them report a rapidly increasing demand for their products.

William J. Lloyd Mfg. Company, Philadelphia, report a large increase in business this season, especially in the line of meat choppers. They have been compelled, in consequence, to extend their plant considerably. The company have, we are told, sufficient orders now booked to keep their factory running to full capacity until October.

Slaymaker, Barry & Co., Lancaster, Pa., have recently built a new brass foundry, 80 x 40 feet. This addition to their plant has been made in order to enable them to place on the market some lines of new goods in aluminum steel and aluminum bronze, as well as some art goods in pure aluminum, amalgams of that metal and others, which they will shortly put before the trade. They report the prospects for the fall trade in locks as very promising, especially in the finer qualities of goods.

E. T. Fraim of Lancaster, Pa., reports a gratifying increase of late in his lock business. A noticeable feature has been the increasing demand for the finer qualities of goods, it being stated that where four cheap Scandinavian locks were formerly sold to one of a high grade, the case may be almost said to be reversed at present, the demand for the better qualities being considerably in excess of that for cheap locks. Mr. Fraim proposes to make some extensive additions to his plant shortly, particularly in the polishing and finishing departments, in which he is very much crowded at present, owing to the press of orders for fine goods.

E. T. Barnum Art Wire and Iron Works, Detroit, Mich., advise us that they are busy in all their departments. Among contracts recently secured are the following: Iron guards for the new Fort Brady at Sault Ste. Marie, Mich.; large antique brass railing for J. M. Sealts, Lima, Ohio; brass fixtures for the City National Bank, Cairo, Ill.; iron and brass work for the State Normal Business College, Lincoln, Neb.; iron stairs for the new court house at Greenville, Miss.; and sidewalk lights for the new Baer Building, Port Huron, Mich. They have also secured the contract for covering the windows of the new Episcopal church at Duluth, Minn., with wire window guards. This is stated to be one of the largest churches in the Northwest and requires about 4000 square feet of wire work.

Hayes Pump and Planter Company, Galva, Ill., shipped a train load of their Boss shoveling boards to Council Bluffs, Iowa, August 16. These goods were for Weirshugart Company, with seven to eight hundred boards to a car. The manufacturers send a neat pamphlet, with map showing route and time schedule of their special train.

The Columbia Grey Iron Company, Columbia, Pa., have recently completed their new and enlarged plant, especially designed and constructed with latest improvements in machinery, &c., for manufacturing all descriptions of hardware, iron novelties and house-furnishing specialties. They are now prepared to furnish estimates on gray iron castings, galvanizing, nickel plating, brass patterns, &c.

Miscellaneous.

Jno. S. Newmeyer of Dawson, Pa., has commenced the erection of 100 coke ovens at that place and will engage in the manufacture of coke.

The plant of the Owensboro Wheel Company, at Owensboro, Ky., has been offered for sale by the American Wheel Trust.

The Ross-Meehan Brake Shoe Company, at Chattanooga, Tenn., report business good and are running full blast. Considerable difficulty is experienced in securing competent molders and some are to be brought on from Chicago.

The Curtis Steel Roofing Company are to build a plant at Niles, Ohio.

J. M. Neill is endeavoring to organize a galvanizing plant at Canton, Ohio.

TRADE REPORT.

The week has been uneventful throughout the country, the happenings in the different markets having done little to help in rendering the situation clear. Reports from the principal centers indicate that the rolling mills are all very busy for early delivery. In Eastern Pennsylvania, those works which have been running right along have work enough to last them up to middle of November, while the others are filling up in a quite satisfactory manner. The Western mills for the present are also well supplied with work, but are not relatively in as good a position as the Eastern concerns. Our Chicago correspondent telegraphs that there are some indications of inquiry for future delivery, but generally speaking buyers still are holding off. In Pittsburgh the makers of Finished Iron seem willing to book to the close of the year at present prices, but buyers expect to do better.

A more satisfactory feeling is developing in Philadelphia, in Pig Iron, cheap lots growing scarcer, but Chicago shows a weakening though more active market, while Cincinnati and Louisville are dull. Pittsburgh reports sales of Bessemer Pig aggregating about 20,000 tons for forward delivery, at \$13.85 Pittsburgh and \$13.75 Wheeling.

With Pig at such prices there seems little hope for the maintenance of present rates on Billets in the Wheeling and Pittsburgh districts. The makers there, however, decline to consider \$22 @ \$22.50 for the balance of the year. Large transactions have been closed in the Chicago district.

The revival of shipbuilding on the lakes has brought a good deal of work to the Plate mills. We understand that the Otis Steel Company of Cleveland have the Plate contracts for six new boats.

In Structural Material the activity continues, and is likely to be the feature for the balance of the season. A sharp reaction in prices is not expected until the Homestead mill becomes an active seller, it being reported that a good part of its contracts had been canceled.

The monotony of the Eastern Steel Rail trade has been broken by the placing of a 10,000-ton order. That such a transaction should be worthy of special mention is an eloquent commentary on the condition of the trade.

Lead has stiffened. The other metals are dull.

Dr. Klaus, the general manager of the Thale Iron Works, at Thale, Germany, is stopping at the Savoy, in this city. The works are famous for their enameled hollow ware.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St. PHILADELPHIA, Pa., August 30, 1892.

The eighth month of the year closes with a better feeling in the Iron and Steel trades than in any of its predecessors. Prices are higher in some specialties, and in all there is a firmness which is very encouraging. Of course the change of feeling is not altogether due to what would ordinarily be called favorable circumstances, but all the same, there is a change, and the chief anxiety is to know how far it will extend. Mills are getting actively to work, and for the present find plenty of business waiting for them. Pig Iron is also beginning to show signs of improvement. There is a much better demand, there is less pressure to sell, and prices without being dearer are firmer. For these reasons it may be said that the fall trade starts in very satisfactorily; the only really difficult point to determine is in regard to consumption. The supply of Finished Material will doubtless increase very rapidly during the balance of the year. How will it be in regard to demand? From a careful investigation in regard to this matter, we are inclined to think that there will be at least a fair average business, and with stocks reduced to unusually small proportions, mills have made an excellent start. Those that have been in continuous operation during the summer have filled in a large proportion of their capacity up to about the middle of November, and with quite an active inquiry for early deliveries, mills that are just starting ought to secure business enough to put them in an equally good position. The chances are, therefore, that for the present there will be little or no change in the market for Finished Material, but there should be some improvement in Pig metal. These remarks are, of course, based on conditions now existing; what will turn up later on we know not, but, as we have already said, appearances are quite favorable. We should be sorry to say a word that would cause uneasiness, but the fact cannot be ignored that we may have an invasion worse than that of a living army to contend with, in which case all theories in regard to business may be frustrated. And even if we escape an actual epidemic, it is possible that measures for self preservation may seriously affect our foreign trade. An embargo on vessels from the many ports now said to be affected would be a terrible embarrassment to business. Let us fervently hope that the country may be spared a calamity of this kind, but there are serious forebodings in regard to it. Perhaps the suggestion once made by the late C. H. Spurgeon is worth considering in this connection. Addressing his congregation in regard to some misfortune that was supposed to be impending, he said: "Well, if we are simply supposing, let us suppose on the other side; it is just as easy to suppose it won't happen as to suppose that it will happen; never say good morning to his Satanic Majesty until you meet him."

Pig Iron.—A very good demand is reported, and in many cases some very important clearing up of odds and ends has been accomplished. The accumulations at many of the furnaces are large and cumbersome, but others are beginning to report shortages, so that the tendency is undoubtedly toward healthier proportions as to supply and demand. Instances have been met with during the past few days in which agents who have closed out their regular Irons, and have been asked to duplicate orders, have tried to secure others to replace them, but failed to do so unless at a higher cost. Under these circumstances the conclusion is not hard to reach that Iron is scarcer, and when cheap lots

are wanted they are not easily found. By cheap Irons it should be understood that any Iron, be it No. 1, 2 or 3, or any other grade that is sold at less than the regular asking price, is supposed to be a cheap Iron. Such Irons are beginning to be quite scarce, so that business is now being done at pretty uniform prices. There is no quotable advance, but concessions are hard to obtain, and the asking price is usually the selling price. Beyond this there is really very little that can be said, although the statistical position is such that, barring developments of an unexpectedly unfavorable character, prices ought to improve, and we believe will improve. Meanwhile sales have been at about the following prices for seaboard delivery, or its equivalent, and from 25¢ to 40¢ less for Southern Irons at Harrisburg, Baltimore or intermediate points:

American Scotch, No. 1x.....	\$17.00 @	\$17.50
American Scotch, No. 2x.....	16 00 @	16.50
Standard Penna. (Lake Ore), No. 1x.....	15.00 @	15.50
Standard Penna. (Lake Ore), No. 2x.....	14.00 @	14.50
Standard Penna. (Lake Ore), No. 2 plain.....	13.25 @	13.50
Medium Quality, No. 1x.....	14.25 @	14.50
Medium Quality, No. 2x.....	13.25 @	13.75
Standard Virginia, No. 1x.....	14.25 @	14.50
Standard Virginia, No. 2x.....	13.75 @	14.25
Medium Va. and Southern, No. 1x.....	14.00 @	14.25
Medium Va. and Southern, No. 2x.....	13.00 @	13.25
Standard Penna. and Virginia Forge.....	13.00 @	13.25
Ordinary Forge.....	12.50 @	12.75
Hot-Blast Charcoal.....	18.50 @	21.00
Cold-Blast Charcoal.....	24.00 @	26.00

Bessemer and Low-Phosphorus Pig.—There is some little business, but nothing to indicate any general change in the position. Prices at furnace are nominally \$16 and \$17 respectively, but it is difficult to say within a few cents per ton what the market is, as some holders are getting restive and seem disposed to realize when ever a good cash buyer can be found.

Ferromanganese.—There is little or nothing to report in this article, holders asking an advance on last sales of from \$1 to \$1.50 per ton, say \$58.50 @ \$59, duty paid, as to-day's price.

Steel Billets.—The market is in much the same condition as reported for several weeks past, viz.: Spot lots and early deliveries at a sharp premium, others dull, and prices not definitely established. For the first half of September \$25.75 @ \$26 would have to be paid for deliveries in the Schuylkill Valley, while for October and later \$24.75 @ \$25 is mentioned as about what sellers ask, but for the present consumers are more concerned in regard to September than the later months.

Steel Rails.—No change from the conditions which have prevailed for several months past, and at this late season not much probability of change. Mills are kept fairly busy on small orders, and prices are steady at \$30, f.o.b. cars.

Muck Bars.—There is a good demand, but stocks are so well cleaned up that consumers find it difficult to secure anything to suit them, unless at prices almost beyond what they can afford to pay. Sales have been made at \$25.75 @ \$26, delivered, but holders now ask over \$26, with buyers at a fraction less than that figure.

Bar Iron.—Mills are still pushed for quick deliveries, but for large lots at later dates there is not much inquiry. This is due to the expectation of lower figures being quoted as soon as the mills begin to make a larger output, so that consumers in the meanwhile are comparatively indifferent in regard to placing orders for forward delivery. Prices vary from 1.70¢ to 1.80¢ at city mills, according to quantity and specifications, and about 1.62½¢ @ 1.67½¢ at interior points, but, as already stated, all depends on the character of the order.

Skelp.—Market very dull, nominal quotations being from 1.60¢ to 1.65¢, delivered, for Grooved, and 1.75¢ @ 1.80¢ for Sheared.

Plates.—There is a good demand for Plates of every description, and mills in this vicinity are full of work for several weeks to come. Inquiries are around for large lots of Tank Plates, Bridge Plates, Boiler Plates, Ship Plates, everything, in fact, and as a rule, prices are very steady. In one or two instances bids have been put in at about a tenth under ordinary quotations, but the circumstances were somewhat exceptional, so that it might not be safe to assume that prices are weakening, although on certain orders from the shipyards competition during the past few days has been sharper than usual. Meanwhile quotations for near-by deliveries are about as follows:

	Iron	Steel
Tank Plates.....	1.95 @ 2.00¢	1.95 @ 2.05¢
Shell.....	2.25 @ 2.35¢	2.25 @ 2.35¢
Flange.....	2.70 @ 2.90¢	2.50 @ 2.60¢
Fire Box.....	3.00 @ 4.00¢	2.70 @ 2.80¢
Special qualities.....		3.25 @ 3.75¢

Structural Material.—There is plenty of work under way at the mills, and from present appearances this is likely to continue for some time to come. There is quite a large amount of work coming out, both for bridge and shipbuilding, as well as for architectural purposes. Included in the latter may be mentioned 400 tons for an extension to Poth's Brewery, besides a great deal of other work in prospect. Prices unchanged, as follows: Say 2¢ @ 2.10¢, delivered, for Angles or Sheared Plates, 2.15¢ @ 2.20¢ for Universals and 2.25¢ @ 2.40¢ for Beams, Channels or Tees.

Sheets.—Rather more demand this week. Feeling better and prices showing something of an upward tendency. Galvanizing men meet at Pittsburgh next week with a view to advancing prices.

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.10¢ @ 3.15¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26.....	3¾¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 70 %
Common, discount.....	@ 72½ %

Old Material.—Market very dull; little or no inquiry the last few days, and some disposition to make concessions to meet a desirable buyer. Old Iron Rails, \$19 @ \$20, delivered; Old Street Rails, about \$23, delivered; Old Steel Rails, \$15.50 @ \$16.50, delivered; No. 1 Railroad Scrap, \$17 @ \$17.50, Philadelphia, or for deliveries at mills in the interior, \$17 @ \$18, according to distance and quality; \$12 @ \$12.50 for No. 2 Light; \$12 @ \$13 for best Machinery Scrap; \$13 @ \$14 for Wrought Turnings; \$8.50 @ \$9 for Cast Borings, and nominally \$21 @ \$22 for Old Fish Plates, and \$14.50 @ \$15 for Old Car Wheels.

Wrought-Iron Pipe.—Quotations unchanged. Some indications of a better feeling, but little doing. Demand small, and manufacturers not inclined to cut present prices, which are about as follows:

Butt, Black.....	60 @ 10 %
Butt, Galvanized.....	52½ @ 10 %
Lap, Black.....	70 @ 10 %
Lap, Galvanized.....	60 @ 10 %
Boiler Tubes, 3 inches and larger	67½ %
Casing.....	60 %

A new firm of brokers in Iron and Steel has been formed in Philadelphia under the firm name of C. B. Houston & Co.,

consisting of the following gentlemen, well and favorably known in the trade: C. B. Houston, who for 17 years was connected with the Chester Rolling Mills of Chester, Pa.; J. Max Bernard, who has been with Jerome Keeley & Co. for the past five years, and H. H. Houston (son of C. B. Houston), who was also connected with the Chester Rolling Mill. The new firm have handsome and commodious offices in the Bullitt Building, and hope to secure a fair proportion of business in the departments with which many years' experience has made them familiar.

Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street, CHICAGO, August 31, 1892.

The demand for Finished Iron and Steel continues unabated. Hitherto it has been almost entirely for prompt shipment and for reasonably early delivery, but now there are indications of an extension of the inquiry for several months ahead, and in a few cases buyers would like to have prices covering a considerable part of the coming year. The movement to purchase for future delivery is not sufficiently well defined yet to appear general. It would be too much to say that the market is now on the way to substantial improvement. If present conditions continue for a little time there will then be no doubt of the future. The problem is, "How long will the existing demand keep up?" Many members of the trade are not sanguine as to the future, but believe that as soon as the rolling mills get into regular operation and resume their normal output the market will again be so well supplied that prices will recede to something like old figures, and they will cause buyers to take less thought of the future course of the trade. Matters are in such a mixed condition at present that most persons are in serious doubt as to the policy they should pursue in covering their requirements for coming months. The chief reason for fearing that prices will not be sustained is the fact that thus far raw material gets weaker instead of stronger.

Pig Iron.—The business of the past week was considerably greater in volume than that of the previous week both in local and Southern Pig Iron. Quite a number of good-sized contracts were entered for delivery running into next year. Prices instead of strengthening on the improved demand are somewhat lower. The Southern furnace companies are still eager for business, and our quotations have been shaded to some extent on the orders taken. Competition among the local furnace companies is also a little keener than it has been, and in a few cases some serious cuts have been made. The general range of prices on local Irons, however, has not been affected as yet, and our quotations indicate the usual character of the sales now being made of this class of Iron. The hope of the market is now in the increased consumption of Pig Iron. The jobbing foundries and the large manufacturing establishments consuming Pig Iron are increasing their business steadily and consuming more Iron than they had expected, so that their purchases are on a larger scale than at this time last year, but so far the supply of Iron has been in excess of even the increased requirements of the trade. Lake Superior Charcoal Iron has been rather quiet since our last report, but the prices then quoted are firmly maintained. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1.....	14.50 @ 14.75
Local Coke Foundry, No. 2.....	13.50 @ 14.00
Local Coke Foundry, No. 3.....	13.25 @ 13.75
Local Scotch.....	15.00 @ 16.00

Ohio Strong Softeners.....	16.25 @	17.00
Southern Coke, No. 1.....	14.50 @	15.00
Southern Coke, No. 2.....	13.35 @	13.85
Southern Coke, No. 3.....	13.00 @	13.25
Southern, No. 1, Soft.....	13.35 @	13.85
Southern, No. 2, Soft.....	12.85 @	13.10
Southern Gray Forge.....	12.50 @	13.00
Southern Mottled.....	12.50 @	12.75
Tennessee Charcoal, No. 1.....	17.50 @	18.00
Alabama Car Wheel.....	21.00 @	22.00
Coke Bessemer.....	15.50 @	16.00
Hocking Valley, No. 1.....	17.00 @	17.50
Jackson County Silvery.....	17.00 @	17.50

Bar Iron.—The demand is very active for immediate wants and inquiries from consumers are extending beyond early deliveries, and in some cases lap into next year. Manufacturers report that they are receiving inquiries from consumers with whom they have been unable to transact business for a long time, which indicates that general difficulty is experienced in securing shipments from mills with which the latter have contracts. The tendency is to establish a higher range of prices, but the trade view this matter conservatively, and some of the most prominent members do not hesitate to say that this condition of affairs cannot be considered permanent, and they look for a return of the old status of prices within the next 30 or 60 days. There are a few mills making a limited range of sizes offering their product at very low prices compared with the cost of iron laid down here from the valley mills. They constitute a disturbing element and undoubtedly have an effect in preventing an advance in prices which, in the nature of things, should have taken place before this. Bar-iron manufacturers are interested in the expected resumption of work at the old plant of the United States Rolling Stock Company, which has been leased to the United States Car Company. The Indianapolis Car Company also resume work this week. The demand for cars is so good that these plants should be able to fill up very speedily with orders, which will cause them to be again large consumers of Bar Iron. Quotations on Common Iron range from 1.63¢ to 1.70¢, Chicago, half extras. Soft Steel Bars vary in price from 1.85¢ to 2¢, Chicago, depending upon the character of the order and location of the mill. Quotations from store continue at 1.90¢ @ 2¢ for Bar Iron and 2¢ @ 2.10¢ for Steel Bars.

Structural Iron.—So much architectural work was checked by the stoppage of the rolling mills that there is now a heavy pressure for material which is badly needed on new buildings. The North Chicago mill started up on Monday, and it is expected that large contracts which had been hanging fire for some time waiting for the starting of the mill will soon be placed. The Beams for several good-sized buildings were sold the past week. Prices of Beams and Angles are now 2.25¢, Chicago, on round lots from mills and 2.50¢ from stock. Angles are selling at 2¢ @ 2.15¢, Chicago, from mill, according to size, and from 2.20¢ to 2.25¢ from stock. Universal Plates can now be had at 2.15¢ @ 2.25¢, Chicago, from mill.

Plates, Tubes, &c.—A large volume of business is in progress. Jobbers' stocks here are in bad shape. A higher price is now asked for large orders than for small ones, since the jobbers do not wish to part with their stocks too rapidly. A strong probability exists that the boiler makers' strike will be settled very soon by the men going back to work. The local Plate trade will then be considerably heavier than it is now. Boiler Tubes are stiffer, and some of the manufacturers who usually stock here have been obliged to go outside to secure Tubes to fill their own orders. We continue quotations at 2.15¢ @ 2.40¢, Chicago, for Tank Steel, and 2.60¢ @ 3¢ for Flange, and 3.30¢ @ 3.50¢ for Nos. 10 to 14 Iron Sheets. Jobbers ask an advance of 1/10¢ @ 1/10¢ on these prices from store.

Sheets.—Good inquiries are in the market for Black Sheets, and the condition of the mills is worse than ever, so far as deliveries are concerned. Few are in shape to promise delivery before October. They quote 2.95¢, Chicago, for No. 27 Common for delivery at that time. Some of the jobbers are now disposed to ease up on prices of Sheets from stock, so that the local market is hardly as firm as it has been. A still better demand is reported for Galvanized Iron by manufacturers' agents, and most mills are said to be well sold up for the remainder of the year. They quote 70 and 5 % for ordinary specifications, but this price is shaded on orders of a straight size. Jobbers continue to quote 70 % off on ordinary lots, but have for some reason held less firmly to their regular prices the past week.

Merchant Steel.—Manufacturers report a very good run of carload orders, with a continued stream of specifications from consumers having season contracts. The Gautier Steel Works report their shipments for July the largest in the history of the company, while August is doing equally well, if not better. Large orders are not looked for at the present time, as the heavy consumers have supplied their requirements for the season. Quotations on Machinery, Open Hearth Spring and Tire Steel are unchanged at 2¢ @ 2.20¢, Chicago, in carload lots from mill; Tool Steel, 6¢ @ 8¢ and upward, according to quality.

Billets and Rods.—The large orders for Billets mentioned last week have practically been closed, the orders going to local manufacturers, who continue to quote \$24.50. Very little is doing in Wire Rods, which are still held at \$34.50. The Washburn & Moen Mill will soon be in the market to dispose of a part of their product of Wire Rods at their Waukegan works.

Rails and Track Supplies.—The Rail trade of the past week was confined to small lots only. Quite a good business is in progress in Light Rails, which are contributing very nicely toward keeping up the activity at the local mills. Prices for standard Rails still range from \$31 to \$32.50, according to quantity and delivery. The price of Splice Bars is unchanged at 1.70¢ to 1.75¢ for Iron or Steel. Track Bolts appear to be stiffer. Carload lots of 4 inch Bolts, with Hexagon Nuts, have brought 2.65¢. Prices now range from 2.65 to 2.70¢, according to size. Spikes are also a little dearer, and can be quoted at 2.10¢ @ 2.15¢ for carload orders.

Old Rails.—A sale of 2000 tons of Old Iron Rails is reported at \$18. An effort has been made to advance prices beyond this rate, and holders are asking \$18.50 for lots immediately available. The railroad companies, however, continue to bring out lots from time to time with which they feed the market, so that consumers have little fear of an advance. Good inquiries are reported for long lengths of Old Steel Rails, which are now quoted at \$14 @ \$14.50. Short pieces under 3 feet are also a little firmer, and may perhaps realize \$12.50. Car Wheels are very quiet and are quoted at \$15, at which small lots have been sold.

Scrap.—There has been a little stir in Old Material during the past week, but consumers are not so desirous of getting it for early delivery as to secure quotations for late September or October. Dealers are not inclined to name prices so far ahead. The largest transaction brought to our notice recently involved 1000 tons of Borings and Turnings accumulated by a local establishment since June. Quotations are unchanged, as follows: No. 1 Railroad, \$16 @ \$16.50; No. 1 Forge, \$15 @ \$15.50; No. 1 Mill, \$11; Pipes and Tubes, \$10; Horseshoes, \$15.50; Sheet Iron, &c., \$7; Cast Borings,

\$5.75; Wrought Turnings, \$8; Axle Turnings, \$9.50 @ \$10; Machinery Cast, \$11.50 @ \$12; Stove Plate, \$9; Malleable Cast, \$10; Car Axles, \$18.50 @ \$19; Fish Plates, \$17.25; Mixed Steel, gross ton, \$10.50 @ \$11; Coll Steel, \$15; Leaf, \$16.50, and Tires, \$15.

Metals.—Copper is selling quite freely, but prices are a little lower. Lake is now to be had at 12¢ in carload lots and \$12.25 in small quantities. Casting brands are quoted at 11 1/2¢ carloads and 11 3/4¢ small lots. Spelter is in very good demand at 4 65¢, carload lots. In Pig Lead, the latter part of the week brought more inquiry than for some weeks, with a stiffening tendency in prices. Sales were made of perhaps 1000 tons spot and near-by delivery at 3.95¢. Refiners now ask 3.97 1/4¢.

St. Louis.

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, August 29, 1892

Pig Iron.—The market continues in the same unsettled condition as last noted. Sales are confined to small quantities at current prices, which fail to show any improvement whatever. When the bottom will be reached is indeed a difficult problem to solve. For months we have heard that prices were scraping bottom, and yet they continued to go lower and lower. Some three or four months since the prospects for a gradual improvement seemed decidedly encouraging, but the labor troubles in Pittsburgh, which caused the shutting down of mills in that and other sections, caused an accumulation of Pig Iron which prevented any possibility of an advance until the stocks were cleaned up or partially disposed of. The conditions to day are not quite as favorable as they were before the labor troubles. The stock of unsold iron on the furnace banks continues to hold its own, and the consumption of Pig Iron continues to grow smaller. The leading question to-day is: What is the matter with the Pig Iron trade? and it is a difficult question to answer satisfactorily. Consumers show their lack of faith in the future of the market by buying only as their needs require. The day for orders of 5000 to 10,000 tons seems to have gone by and if it is known that there is a buyer in the market for say 1000 tons, he is immediately swooped down upon by the agents, and as a result gets his iron at pretty near his own price. As has been repeatedly stated in this column, buyers are not losing anything by this process of buying, as, should the market take a turn upward, they are in a position to take advantage of the movement, and, on the other hand, lose nothing by a slump in prices. Under the circumstances heavy purchases are practically out of the question, and will doubtless remain so until the market shows some signs of improvement. For ordinary quantities we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$13.50 @	\$13.75
Southern Coke, No. 2 Foundry,	12.50 @	12.75
Southern Coke, No. 3 Foundry,	12.00 @	12.25
Gray Forge.....	11.50 @	11.75
Southern Charcoal, No. 1 Foundry.....	15.00 @	15.50
Southern Charcoal, No. 2 Foundry.....	14.50 @	15.00
Missouri Charcoal, No. 1 Foundry.....	14.25 @	14.50
Missouri Charcoal, No. 2 Foundry.....	13.75 @	14.25
Ohio Softeners.....	16.25 @	16.75

Bar Iron.—The demand is still of good dimensions, and while not quotably lower, prices are not so firm as they were two weeks since. Jobbers have been enabled to fill up their stocks and are now in a position to fill all orders promptly. They quote 1.80¢ @ 1.85¢ for small lots from store. Mills quote for carload orders

1.62½¢ @ 1 67½¢, f.o.b. cars East St. Louis.

Barb Wire.—There seems to be some improvement in this department. Mills report a large trade considering the season, but prices do not seem to improve to any extent. Sales during the week under review were made on the basis of \$2.25 for Painted, and \$2.70 for Galvanized. It is reported that this price is occasionally shaded, but if so it is only in carload quantities that less than the above prices will be accepted.

Wire Nails.—The demand for Wire Nails continues to keep up remarkably, and mills are selling large quantities of them. There is a vast amount of building going on, and as Nails are a necessary requisite, large quantities of them are used. Mills quote \$1.80, which is shaded on desirable orders.

(By Telegraph.)

Pig Lead.—The market is considerably firmer than last reported; sales have been made at 3.95¢, and holders are asking 3.97½¢ @ 4¢ for prompt deliveries. Conservative judges do not anticipate any large advance, and claim the present movement is merely the reflection of the upward tendency displayed in the New York market during the past few days.

Spelter.—This metal fails to improve, either as regards price or demand; the nominal price to-day is 4.45¢, but consumers can fill their wants at 4.40¢ without any particular trouble. The outlook for Spelter is not very flattering. The large increase in production during the first half of the year is proving a stumbling block to any advance, and as consumption fails to keep pace with this increase, the stocks on hand are growing larger. Then, again, the foreign demand has ceased entirely, thus cutting off a very important outlet. So that, taking everything into consideration, it does not seem probable that the market will be treated to any advance in the near future.

Pittsburgh.

Office of The Iron Age, Hamilton Building, Pittsburgh, August 30, 1892.

At a meeting of the roughers, held in this city a few days since, it was decided to accept the reduction of 10 % in their wages as agreed upon by the Conference Committees of the Pittsburgh manufacturers and the Amalgamated Association at the time of the scale settlement. This action of the roughers clears away all dissatisfaction in labor circles for the time being over the settlement of the scale, and as a result a majority of the mills in Pittsburgh and the Mahoning and Shenango valleys are in operation, and the balance will be in operation in a very short time. A very active demand for all kinds of finished material is going, and many of the mills have enough business to keep them pretty well employed for some time. This activity in demand applies particularly to Steel Plates, Structural Material and Soft Steel Billets. The long shut down of the mills depleted stocks very thoroughly, and the majority of orders sent in are accompanied with instructions "to ship at once if possible." It is hardly necessary to state that this is a very pleasing condition of affairs to manufacturers when contrasted with the only moderate demand that was going up to within a month or so of the time of the shut down of the mills. The improved condition of affairs in finished material

does not prevail in the crude Iron market, nor can it be expected until some of the enormous stocks that are piled up have been considerably reduced.

Pig Iron.—As yet the starting of the Iron and Steel mills has not resulted in an increased demand for Pig Iron. As indicated above, this cannot take place until stocks have been materially reduced. While it is true that a large number of furnaces both in Pittsburgh and the valleys are idle just now, still, at these same furnaces, sufficient amounts of Pig Iron are piled up to represent their output for several months to come. Notwithstanding this condition of affairs, the opinion is prevalent among buyers as well as makers that prices are about as low they can go. If the present active demand for finished materials continues for a considerable period, it will, of course, cause a large consumption of Pig Iron, which is the only thing that can bring about better prices. While little or no Southern Iron finds its way into Pittsburgh, considerable quantities are sold in territory adjacent and at prices which our furnaces do not care to meet. This naturally takes business away from Pittsburgh, and has a tendency also to keep prices down to a very low notch. Mabel Furnace of Perkins & Co., Limited, at Sharpsville, Pa., which has been idle for some time, was put in blast on Saturday, the 27th, ult. During the shut down it was extensively repaired and is now in excellent condition. During the week under review prices did not show any material change, but there is no difficulty in buying for deliveries throughout the year at prices named below. We quote as follows:

Neutral Gray Forge.....	\$12.50 @	cash
White and Mottled.....	12.2 @	\$12.50, "
All-Ord Mill.....	12.50 @	12.75, "
No. 1 Foundry.....	14.25 @	14.50, "
No. 2 Foundry.....	13.25 @	13.50, "
Bessemer Iron.....	13.85 @	14.00, "

We note a sale of 10,000 tons of Bessemer Iron made by a furnace in the Mahoning Valley for delivery throughout the year at \$13.25 at furnace, which is equal to \$13.85 at Pittsburgh. Also a sale of 8000 tons of Bessemer at a price said to be equal to \$13.75, delivered in Wheeling district. Also a sale of 3500 tons of Bessemer for October and November at \$14, Pittsburgh, and a sale of 1000 tons of Grey Forge at \$12.50, delivered at buyer's mill.

Soft Steel Billets.—Contrary to expectations, Shoenberger & Co. of this city have not as yet arranged a steel scale with their employees for 1892-93, and as a result of this the firm have announced that they will start up with non-union men to-day (Tuesday). It is claimed that the firm agreed to sign a scale similar to that signed by Jones & Laughlins, Limited, but the men refused to accept it. We print elsewhere a dispatch relating to the latest developments in this matter. The demand still continues very active, and as makers generally are pretty well supplied with business, they are not inclined to offer any inducements to buyers to place orders. Producers of Soft-Steel Billets realize the fact that the consumption of Soft Steel will be larger from this time forward than ever before, owing principally to the fact that it can be sold from \$2 to \$3 per ton less than Muck Bar. In view of this they are not inclined to book orders for balance of the year delivery at prices which have been offered by buyers. Several offers for large amounts which would net makers from \$22 to \$22.50 have been declined. Pipe and Tube makers continue to be large consumers of Soft Steel, and consumption from this source will undoubtedly increase right along. We note a sale of 1000 tons of Billets for delivery after September 7 at \$24.50, delivered at buy-

ers' mill, also a sale of 2000 tons for delivery after September 15 at \$24.25, delivered at buyers' mill.

Ferromanganese.—There is nothing new to report, and the price of domestic Ferromanganese continues at \$60, delivered at buyers' mill. The claim is made, however, that for large lots buyers are able to shade this price.

Structural Material.—As we announce elsewhere in this issue, every department of the Homestead Steel Works is in full operation, some of the departments on double turn, and we can now report the Carnegie Steel Company, Limited, as an active producer of Structural Shapes. In addition to this, the Columbia Iron & Steel Company of Uniontown, Pa., have arranged a scale with their employees, and all departments of their plant are in operation on double turn. It is said that this concern have sufficient orders booked to keep them busy for two months to come. A very active demand for all kinds of Structural material is reported, and while a good many old contracts remain on the books to be cleared up, it is claimed that the new business brings slightly higher prices than those quoted below. A prominent maker advises us that not at any time during the present year has the demand been as active as it is just now, with excellent prospects of remaining in this condition for some time to come. We quote prices as follows: Beams and Channels, 2¢ @ 2.05¢ for desirable orders, while a slight advance is obtained for small lots; Universal Mill Plates, Steel, we quote at 1.80¢ @ 1.85¢; Angles 1.85¢ @ 1.95¢; Tees, 2.40¢ @ 2.50¢; Refined Iron Bars, 1.65¢ @ 1.70¢; Steel Bridge Plates, 2¢ @ 2.10¢, and Z Bars, 2 10¢ @ 2.15¢.

Steel Plates.—An increased demand is reported and mills have about all the business they can handle. Prices are firmly maintained and makers advise us that the outlook is very promising. We make no change in prices over those quoted last week, which were as follows: Flange, 2.10¢ @ 2.20¢; Fire Box, 3.60¢ @ 3.75¢; Shell, 2¢ @ 2.15¢; Tank, 1.85¢ @ 1.95¢, f.o.b. Pittsburgh.

Wire Rods.—The slight labor difficulty at the plant of the Pittsburgh Wire Company, referred to in our issue of last week, has been amicably adjusted, and all the Rod mills in Pittsburgh are now in full operation. But few Rods are changing hands, however, as it is understood that buyers generally anticipated their wants for a considerable period some time ago. The general resumption of operations in the Wire Nail mills will undoubtedly lead to an increased demand for Wire Rods just as soon as present contracts are cleared up. In the absence of any sales reported we repeat quotations of last week, being \$31.50 @ \$32, f.o.b. at mill, for prompt shipment.

Manufactured Iron.—As we note elsewhere, a meeting of roughers was held in this city a few days since, and they agreed to accept the 10 % reduction in their wages as decided upon at the recent conference when the Iron scale was adopted. The roughers claim, however, that unless they are conceded an advance in wages by the heaters when the scale comes up for settlement next year, they will form an organization of their own and withdraw from the Amalgamated Association. But little attention, however, is given to this assertion, as the fact is recognized that an organization of roughers without the support of the Amalgamated Association would not be able to accomplish anything that would be of benefit to the members. The Pittsburgh Forge &

Iron Company of this city, who refused to sign the scale as adopted by the Conference Committee of the Pittsburgh manufacturers and the Amalgamated Association, have made an arrangement with that organization, and their plant is now in full operation. Officials of the Amalgamated Association and a committee representing the Pittsburgh and Mahoning Valley manufacturers are now at work preparing the revised Iron scale, and it will be ready for distribution among the manufacturers for their signatures some time during this week. The demand for all kinds of Finished Iron is reported as quite heavy, and mills generally have considerable business booked ahead. Makers are quite willing to enter orders for delivery throughout the year at present ruling prices, but a disposition is shown by buyers to not anticipate their wants very largely, believing that with the mills in operation they will be able to obtain lower prices by holding orders back for a while, except those that they are compelled to place. The terms upon which the Iron scale was arranged, by which manufacturers are compelled to pay \$5.50 per ton for boiling for another year, will undoubtedly result in the substitution of Steel for Iron more largely than ever before. The Upper Union Mills of the Carnegie Steel Company, Limited, in this city are working on Steel altogether, while the puddling department of the plant of J. Painter & Sons' Company, containing about 60 puddling furnaces, is still idle. At the American Iron and Steel Works of Jones & Laughlins, Limited, not more than half of the puddling furnaces are being operated. We quote No. 1 Bars at 1.65¢ @ 1.70¢, and Old Rail and Scrap Bars at 1.50¢ @ 1.60¢; No. 24 Sheet we quote at 2.55¢ @ 2.60¢, all 60 days, 2¢ off for cash.

Muck Bars.—While the mills generally have resumed operations but little stock has accumulated as yet. A few transactions are taking place. During the six weeks' shut down a good many concerns bought Muck Bar quite largely, some of them buying sufficient amounts to cover their requirements for the balance of the year. We quote No. 1 Muck Bars at \$24.50 @ \$24.75 for best grades, delivered at buyers' mill. The fact that boiling continues at \$5.50 in the Pittsburgh district will undoubtedly lead to a very decreased demand for Muck Bars, and it is not expected while present conditions last that they will play a very important part in the markets.

Merchant Steel.—Trade continues in a fairly satisfactory condition, although the demand is hardly as large as makers expected it would be at this time. Indications for an improvement, however, are reported as being good. Prices do not show much change, and we quote as follows: Open-Hearth Tire and Sleigh Shoe Steel, 1.95¢ @ 2.05¢; Machinery, 2¢ @ 2.10¢; Spring, 2.10¢ @ 2.15¢; Toe Calk, 2.30¢ @ 2.35¢, and Tool Steel from 6¢ upward, according to quality.

Steel Rails.—A moderate demand is going, confined chiefly to small lots. Considerable business is reported as being in sight, but develops very slowly. Price remains at \$30, f.o.b. at mill, for standard sections.

Wire and Cut Nails.—The Wire Nail mills generally are again in operation, and a fair demand is reported. Buyers some time ago had considerable difficulty in getting orders booked for shipment. This condition of affairs has eased up somewhat, and shipments are now made about as promptly as desired. We understand that the Findlay mill of the Salem Wire Nail Company, which was closed down for a short time on account of labor troubles, is again in operation. Prices do not show much change, and we quote Wire Nails at \$1.60 @ \$1.65

in carload lots, while from 5¢ to 10¢ a keg more is obtained for less quantities. The demand for Cut Nails has disappeared nearly altogether, and there is very little doing. Dealers advise us that small consumers who formerly ordered from 25 to 50 kegs of Cut Nails have gone over almost entirely to Wire Nails, and it is claimed that more Cut Nails are used in Pittsburgh at the present time than in any other place in this country. In the Wheeling district but one mill is in operation, and the same is true of the Mahoning Valley district. We quote Cut Nails at \$1.47½ @ \$1.50 for 30¢ averages, f.o.b. at mill.

Barb Wire.—The season is about over, and as a result there is very little business moving. The latest concern to enter the field as makers of plain Wire of all kinds is the Pittsburgh Wire Company, whose plant is located at Braddock, Pa. Their goods are handled by the Bindley Hardware Company of this city. We quote plain Barb Wire at \$2.25, and Galvanized at \$2.70, in carload lots. It is claimed that several makers have offered to shade these prices considerably on large orders.

Wrought-Iron Pipe.—A very fair demand is reported, specially for Black Weld Pipe running from 4 to 6 inches in size. The opening up and development of new gas fields in territory adjacent to Pittsburgh has very materially increased the demand for Pipe, and should these recently discovered gas fields hold out, there is no doubt whatever but that a very large amount of Pipe will be required to take the gas from these fields to consumers. In addition to this, confidence in old gas fields has been revived and gas companies are making more inquiries for Pipe at the present time than for many months past. Discounts are unchanged and remain as follows: Black, Butt, 60 and 10¢; Lap, 70¢; Galvanized, Butt, 50 and 10¢; Lap, 60¢; Boiler Tubes, up to 2½-inch inclusive, 60¢; 3 inches and larger, 65¢; Casing, 55¢; Inserted Joint Casing, 50¢. Actual sales reported to us would indicate that these discounts are being very closely observed, except on orders for very large lots buyers are granted slight concessions. We are also advised of another Pipe-line project in the market, which if carried through will require from 8000 to 10,000 tons of Pipe ranging from 5 to 6 inches in size.

Skelp Iron.—The general resumption of the mills has very visibly increased the supply, for which makers report an active demand. The outlook for the future is quite encouraging, owing to the picking up in volume of business among Pipe and Tube makers. We quote Narrow Grooved at 1.60¢ @ 1.70¢, according to sizes, while for the various smaller sizes slightly increased prices are obtained. We quote Sheared at 1.80¢ @ 1.90¢, according to sizes.

Scrap Iron and Steel.—There is absolutely nothing new to report, and the resumption of operations in the mills has not as yet brought about any improvement in the demand for either Scrap Iron or Steel. This is owing to the fact that stocks on hand were pretty large before the shut down occurred, and these will have to be cleared up before buyers can enter the market. In addition to this the substitution of Soft Steel for Iron in so many cases has had the effect of causing many former buyers of Scrap material to quit the market altogether. Prices are unchanged, and we quote as follows: No. 1 Railroad Wrought Scrap, \$14 @ \$14.50 per net ton; Cast Scrap, \$11.50 @ \$12 per gross ton; Billet and Bloom Ends, \$16 per gross ton; Cast-Iron Borings, \$6.50 @ \$7 per gross ton; Railroad Coil Springs, \$17.50 @ \$18 per gross ton; Leaf Springs, \$19.50 @ \$20; Old Steel Axles, \$18.50 @ \$19 per gross ton.

Old Rails.—There is no improvement in the demand, and while a few lots changed hands last week the amounts involved were very small. Iron Rails are looking up slightly, however, and one sale was made last week involving 200 tons at a price reported as \$19.50, delivered in the Mahoning Valley. We quote as follows: Old Steel Rails, short pieces, \$15.75 @ \$16; Miscellaneous lengths, \$14.75 @ \$15, and long lengths \$15.25 @ \$15.50. Old Iron Rails we quote at \$19.50, delivered in Mahoning Valley.

Cleveland.

CLEVELAND, OHIO, August 29, 1892.

Iron Ore.—Only a small amount of Ore has been sold during the past week. The few transactions recorded were on the basis of a 30¢ reduction over the prices per ton for the same Ores one year ago. Some Non-Bessemer have been sold at figures below \$3.50 per ton, and some inquiries for Non-Bessemer Hematites have been made. The Ore men have forced the freight rate from Escanaba to Lake Erie ports back to 70¢, while the Ashland rate has been cut from \$1.15 to \$1, and the Marquette rate from \$1 to 90¢ per ton. There were unloaded on the Cleveland docks during the week just closed 80,000 tons of Ore, the receipts at all Lake Erie ports reaching close to 200,000 tons. This total exceeds by 25,000 tons the receipts for the same week last year, and brings the aggregate receipts for the season very close to that recorded up to August 29, 1891—possibly 25,000 tons in excess thereof. Shipments to the furnaces are fairly active, 35,000 tons having been sent along during the past week, as compared with 38,000 for the corresponding seven days one year ago. The active buying movement anticipated for the closing week in August has not materialized, but dealers look for some substantial orders early in September. The improved condition of the market noted last week continues, although business is a little slack, buyers failing to see anything in the present situation to warrant the presumption that prices will go any higher for a month or six weeks.

Pig Iron.—The market shows no signs of an improvement. Instead it is reported that in order to supply demands here and there, even the present quotations have been cut in some instances. The activity at the mills has had its effect upon the stock piles, but the supply is still out of all proportion to the demand. A foundryman said to-day that he had been offered 5000 tons of Foundry (No. 1) at practically his own price, as Southern Softeners could be bought for \$13.50, including freight charges aggregating \$3.90 per ton. Quotations are not fully indicative of the market's condition, but as given out are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$16.50 @ \$17.00
Nos. 1, 2 and 3 Bessemer, per ton.	14.00 @ 14.25
No. 1 Strong Foundry, per ton.	14.25 @ 14.50
No. 2 Strong Foundry, per ton.	13.25 @ 13.50
No. 1 American Scotch, per ton.	14.00 @ 14.50
No. 2 American Scotch, per ton.	13.50 @ 13.75
No. 1 Soft Silvery, per ton.	15.00 @ 15.50
Mahoning and Shenango Valley	
Neutral Mill Irons, per ton.	13.00 @ 13.25
Mahoning and Shenango Valley	
Red Short Mills, per ton.	13.25 @ 13.50

Sales for the week have been confined to a very few unimportant purchases. Some inquiry for Ohio Softeners is reported to-day.

Nails.—The market continues active. Wire Nails being in especially strong demand at \$1.75 @ \$1.80 per keg in stock. It is probable that prices will go even higher.

Barb Wire.—Only moderate sales are reported. Dealers, however, look for a good fall trade.

Old Rails.—There has been some improvement in the market, although prices

have not materially advanced. Old Americans can still be bought for \$19.25 @ \$19.50.

Scrap.—Prices are a little firmer and the demand has somewhat improved. No. 1 Railroad Wrought is quoted at \$14.50; Cast Scrap, \$12 @ \$12.50; Cast Borings at \$7.25 @ \$7.50 per ton.

Manufactured Iron.—The volume of trade is reported to be considerably larger than for several weeks past. Prices have not changed, although they are reported a trifle firmer.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., Cincinnati, August 31, 1892.

There is little of interest in the Iron market. There has not been enough business during the week to indicate its tone, there being no large sales, and even the current consumptive order of trade was on a smaller scale than usual. It is evident that buyers are not disposed to anticipate their requirements, and that they have pretty fully covered the immediate necessities. There is considerable anxiety to see the report of production during the month of August and the condition of stocks, but it is scarcely hoped that there will be such an improvement as is required to bring the Iron trade up to a normal condition. While there is apparently a liberal consumption of Pig Iron going on in this district, there are no indications that it can be materially enlarged in the early future, and without such enlargement it will be difficult for the furnaces to dispose of the current production. Prices would seem to be low enough to promote consumption to its uttermost. Quotations unchanged, as follows:

Foundry.

Southern Coke, No. 1.....	\$13.00 @	\$13.25
Southern Coke, No. 2.....	12.00 @	12.25
Southern Coke, No. 3.....	11.50 @	11.75
Ohio Soft Stone Coal, No. 1.....	16.00 @	16.50
Ohio Soft Stone Coal, No. 2.....	15.00 @	15.50
Mahoning and Shenango Valley.....	16.60 @	17.25
Hanging Rock Charcoal, No. 1.....	19.75 @	20.00
Hanging Rock Charcoal, No. 2.....	19.00 @	19.50
Tennessee and Alabama Charcoal, No. 1.....	16.50 @	17.00
Tennessee and Alabama Charcoal, No. 2.....	15.50 @	16.00

Forge.

Gray Forge.....	11.00 @	11.25
Mottled Neutral Coke.....	10.00 @	10.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	18.75 @	19.00
Lake Superior Car Wheel and Malleable.....	17.75 @	18.00

Louisville.

LOUISVILLE, Ky., August 29, 1892.

Prices have continued firm, basis \$8.25, furnace, for Gray Forge, but sales have not been large, and what buyers were on the market have paid this price. Sales for Eastern account have been more numerous than for some time, but it is thought that the demand was largely owing to the forced shutting down of many of the rolling mills there, which are now starting up and have bought for their present needs. Contracts recently made by pipe manufacturers have been on a low basis that necessitates their purchasing Gray Forge at the present market in order to be protected. There seems but little prospect of any special advance for some time, though fall trade will increase the demand for Iron to a greater extent than has prevailed for the last month or two. We quote for cash, f.o.b. cars, Louisville:

Southern Coke, No. 1 Foundry.....	\$13.25 @	\$13.75
Southern Coke, No. 2 Foundry.....	12.25 @	12.75
Southern Coke, No. 3 Foundry.....	11.50 @	11.75
Southern Coke, Gray Forge.....	10.75 @	11.25
Southern Charcoal, No. 1 Foundry.....	15.00 @	16.00
Southern Car Wheel.....	17.50 @	18.00

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, August 31, 1892.

Pig Iron.—Buyers are taking only small quantities for prompt delivery and the market tributary to New York is dull, with prices as low as they have been lately. We quote Northern brands at \$15 @ \$15.50 for No. 1; \$14 @ \$14.50 for No. 2; \$13 @ \$13.50 for Gray Forge, tidewater. Southern Iron, same delivery, \$14.25 @ \$15 for No. 1; \$13.25 @ \$14 for No. 2 and No. 1 Soft; \$12.75 @ \$13.50 for No. 2 Soft; \$12.25 @ \$13 for Gray Forge.

Ferromanganese.—The market is dull at \$57.50 @ \$58.

Billets and Rods.—No business of any consequence is reported, Billets remaining \$26, at tidewater, for domestic and \$30.50 @ \$31 for foreign. Swedish Iron is a little firmer, with quotations remaining \$54.50 @ \$55.

Steel Rails.—An Eastern mill has sold during this week 10,000 tons of Steel Rails for prompt delivery. The market is quiet at \$30 at mill. The meeting of the makers will probably be held in the middle of September.

Manufactured Iron and Steel.—The majority of the Eastern mills are so busy with accumulated orders that they are retaking the fact philosophically that new work is not coming in very fast. Still there is a good deal in sight. Among the interesting structures now being figured on is the new four-track draw and viaduct for the Hudson River road in this city, which will call for about 25,000 tons of material and some heavy machinery. We quote: Beams, 2.35¢ @ 2.75¢ for small lots and 2.20¢ @ 2.50¢ for round lots, according to sizes; Angles, 1.95¢ @ 2¢; Sheared Plates, 1.9¢ @ 2.10¢; Tees, 2.30¢ @ 2.75¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.95¢ @ 2¢ for Tank; 2.20¢ @ 2.25¢ for Shell; 2.50¢ @ 2.65¢ for Flange; 2.6¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock; Refined Bars are 1.8¢ @ 1.9¢, on dock; Common, 1.6¢ @ 1.65¢. Scrap Axles are quotable at 1.95¢ @ 2.10¢, delivered. Steel Axles, 1.95¢ @ 2.1¢, and Links and Pins, 2¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered.

Cotton Ties.—The season is drawing to a close. Competition at times has been sharp, and Ties have sold as low as 80¢ at mill. They are now quoted 85¢ @ 90¢ per bundle at mill.

Merchant Steel.—We quote Machinery, 1.80¢ @ 1.85¢; Tire, 1.85¢ @ 2¢; Toe Calk, 2.20¢ @ 2.30¢, and Sleigh Shoe, 1.75¢ @ 1.80¢, delivered.

Track Material.—We quote Spikes, 1.90¢ @ 2¢; Fish Plates, 1.60¢ @ 1.65¢; Track Bolts, square nuts, 2.50¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Metal Market.

Copper.—The position of the market is no more clearly defined than it was a week ago. Home consumers buy with no greater freedom, at all events, nor do export purchasers compensate in any noticeable degree for the slackness of home buying. Production meanwhile continues on a liberal scale and it is plain that more or less accumulation on producers' hands must be taking place unless the distribution runs far ahead of what is reflected in transactions reported by local agents and brokers. Prices for Lake Superior Ingot stand practically the same as they were a week ago, with 11½¢ the popular quotation, but 11¼¢ @ 11.65¢ a more correct representation of the basis at which the moderate business passing is effected. Electrolytic is generally quoted at 11¢, but

sells at as low as 10½¢. For common casting brands 10¼¢ is the general quotation, but some business is understood to have been done at a shade less.

Pig Tin.—A lower range of price has ruled here and the market seems still to move in sympathy with London fluctuations to a great extent, although apparently suffering from lack of support sufficient to offset the natural weight of heavy local supplies. In a speculative way business has been recorded at 20.30¢ @ 20.35¢ for September delivery, or .20¢ below prices that prevailed a week ago, and at 20.35¢ seller's option the balance of the year. Spot price has declined nearly as much, going to 20.30¢ @ 20.35¢, net c&s&b, for 10-ton lots and 20¼¢ @ 20½¢ for ordinary jobbing quantities.

Pig Lead.—The undercurrent of firmness that was noticeable last week has gained headway, and, to a certain extent, the expectations of a better trade have been realized also. Moderate sales were made early in the week at 4.10¢ @ 4¼¢, but subsequently 4.15¢ was paid for about 300 tons and a shade over 4.17½¢ for about 250 tons. At the close there were few if any, sellers at less than 4.20¢, while 4.15¢ was bid for deliveries this month and next.

Spelter.—Although confined chiefly to single carload lots, sales of Western product have shown some improvement the past week and the market is rather steadier in tone. Some Western brands may yet be secured at 4.65¢, but 4.70¢ has been paid and is still the more common price for prompt or forward shipment.

Antimony.—Still lower prices have been touched and the market remains weak, with merely routine business passing. Current quotations are 10¼¢ for Hallett's, 11¼¢ @ 11½¢ for L. X., 11¼¢ for Crown and 12¼¢ @ 12½¢ for Cookson's.

Tin Plate.—The market has remained positively dull, and prices for nearly all varieties of Plate are still rather weak and unsettled. No positive decline in quotations on spot goods is noted, but for future delivery purchases could doubtless be made at some concessions on last week's rates, since the primal market is still depressed. We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, \$5.15; J. B. grade, do., \$5.35; Bessemer do., \$5.20 @ \$5.25; light weights, 100-lb, 10¢ less; 95-lb, 20¢ less; 90-lb, 30¢ less than full weight; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.80. IC Charcoals—Melyn grade, ½ X, \$6.40; for each additional X add \$1.50; Allaway grade, \$5.70; Grange grade, \$5.80; for each additional X add \$1.20. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.40; M. F., 14 x 20, scarce; do., 20 x 28, \$16; Dean, 14 x 20, \$5.45; do., 20 x 28, \$10.80; D. R. D. grade, 14 x 20, \$5.25; do., 20 x 28, \$10.50; Mansel, 14 x 20, \$5.30; do., 20 x 28, \$10.45; Alyn, 14 x 20, \$5.40; do., 20 x 28, \$10.70; Dyfryn, 14 x 20, \$5.65; do., 20 x 28, \$11.10. Wasters—S. T. P. grade, 14 x 20, \$5.10; do., 20 x 28, \$10; Abercarne grade, 14 x 20, \$5; do., 20 x 28, \$9.75.

Financial.

The most absorbing topic of the week in business circles is the alarming spread of cholera in Europe and the possible effects upon the Columbian Exposition, to open in Chicago next May, but the extraordinary precautions taken by our quarantine and sanitary authorities are relied upon to arrest the spread of the disease in this direction. Shippers, however, express apprehension that commerce may suffer.

As concerns the labor question, the resumption of work in the iron and steel mills of Pennsylvania and Ohio and the termination of strikes in all directions afford a more cheerful aspect. Merchandise that was detained at shipping points is going forward to its destination. Prices of commodities have rallied within the last few days in several instances. Coal is artificially advanced from September 1, in accordance with plans matured as long ago as last spring, but spot wheat started up at the close on stronger cables and less favorable crop reports from the West and Europe. The English crop is turning out better than expected, estimates ranging from 60,000,000 bushels to 68,000,000 bushels. In France reports of the quality of new wheat are favorable. The estimated requirements by importation are about 67,000,000 bushels. New samples of German wheat and rye are very fine. Russian reports are still irregular, but suggest an ample supply of wheat for export from the Danubian provinces. The wheat crop of Italy is estimated at 110,000,000 bushels, against 128,000,000 bushels in 1891. It is claimed that Italy will require to import about 32,000,000 bushels to supply her wants. The Hungarian Minister estimates the world's wheat crop at about 2,122,000,000 bushels, against 2,352,000,000 bushels last year. The same authority estimates the world's rye crop at 1,245,000,000 bushels, against 1,047,000,000 bushels last year. A dispatch from Toronto says that the total wheat crop of Canada this year will be 55,000,000 bushels, against 60,000,000 in 1891. Kansas City dispatches say all Kansas roads are short of cars and shippers find great difficulty in sending forward consignments of grain. Refined sugar advanced. Spot cotton advanced $\frac{1}{16}$ ¢. Provisions were strong, in sympathy with hogs, and fairly active. Details are being completed for the big Food Exposition to occupy Madison Square Garden from October 1 to October 27. The trouble arising in prospect of the expiration February 1 of the subsidy contract between the Pacific Mail Steamship line and the Panama Railroad, also complications between the Pacific Mail and the transcontinental railroads, suggest the probability of important new freight arrangements. A Panama director speaks of another steamship line from New York to San Francisco as a possible outcome. Among dry goods jobbers the fall movement to date is large. Business failures during the week were 165, as compared with 204 in the same week in 1891. There is an increased volume of trade at almost all the leading centers. The bank clearings are $\frac{1}{2}$ % above those of last year.

On the Stock Exchange the chief events of the week were the decisions of Judge McCormick at Dallas, Texas, in which the Texas Railroad Commission law was declared unconstitutional, and that of Chancellor McGill, who declared the lease of the Jersey Central Railroad Company illegal. The latter made the coal stocks feverish and lower on Friday. There was liberal selling of New England early in the week, on news that the property of the New England Terminal Company had been absorbed by the New York, New Haven & Hartford, but later this stock partially recovered. The grangers drooped on lower grain markets, due to informal advices from Europe. Reading recovered on the declaration of President McLeod that the decision of the Chancellor would have no effect upon the plans of the combination, as the Central New Jersey is absolutely controlled by ownership of stock. On Monday there was apparently good buying of St. Paul on a report that the pool in the stock had resumed operations, and also of the conviction that the law, as laid down by Judge McCormick, at Dallas, Texas, would be applied against the Iowa Railroad Commissioners. Pacific

Mail fell off sharply on a report that the Panama Railroad Company are prepared to open independent lines of steamers in opposition, and free selling of Reading affected the whole market.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended.....	100
U. S. 4s, 1907, registered.....	115½
U. S. 4s, 1907, coupon.....	115½
U. S. currency 6s.....	107

Money is firmer and more active, owing to demand for crop movements, further orders for gold supposed to be on account of Austria-Hungary and smaller offerings by the local banks. There is considerable foreign money in the market, on which gold notes are demanded. Rates are 3 % for 60 days, 3½ % for 90 days, 4 % for four months and 4½ % @ 5 % for five to six months. Commercial paper is in good supply. The weekly bank statement showed a decrease of \$2,491,000 in the legal reserve. Loans contracted \$1,386,000. Bar silver in London $\frac{1}{4}$ d. lower, at 38½d. per ounce. New York dealers' price for silver unchanged at 83¢ per ounce. Foreign exchange is firmer at \$4.87½ @ \$4.89.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 31, 1892.

Business in Scotch Pig Iron warrants has been of smaller volume and price has ruled somewhat easier, 41/10 this week, although a further reduction to 395,000 tons in stocks in public stores has taken place. A scarcity is reported of certain brands and 2/ advance for the same is asked by holders. Several makers, it is stated, have nothing to sell for September delivery. Shipments latterly have been light and that fact is an offsetting feature. Cleveland warrants have advanced to 41/ and are very firmly held, as there are only 16,000 tons in public stores. Hematite warrants have varied little from 50/, but are lightly traded in.

Pig Tin market has been irregular during the week, without much business for either speculative account or consumption until near the close. Stocks are kept down to manageable proportions and the feeling at present is more confident.

Copper has been somewhat unsettled. Merchant Bars, prompt delivery, sold at £44. 3/9, but subsequently rallied owing to purchases for India account and better inquiry from home consumers. The bulk of recent speculative sales, it is reported, have gone into stronger hands.

There has been more business in Tin Plate, but buyers require much coaxing, and ordinary Bessemer at 11/9 in Swan sea seem to be unattractive.

Most branches of the Steel market have relapsed into dullness, and prices are unaltered. Some makers offer Rails at £4. 2/6 and Ship Plates at £5. 12/6, f.o.b., at shipping points.

Scotch Pig Iron.—Coltness is held at 2/ and Dalmellington at 1/6 advance. Otherwise very little change in prices and the general market quiet.

No. 1 Coltness, f.o.b. Glasgow.....	55 6
No. 1 Summerlee, " ".....	53/6
No. 1 Gartsherrie, " ".....	52/
No. 1 Langloan, " ".....	53/6
No. 1 Cambro, " ".....	44/6
No. 1 Shotts, " at Leith.....	52/6
No. 1 Glengarnock, " Ardrossan.....	50/
No. 1 Dalmellington, " ".....	49/6
No. 1 Eglinton, " ".....	47/6
Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.	

Cleveland Pig.—Business has been fairly active and the market is firm at 41/3 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Demand is running slow and prices are barely steady at 50/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—Business moderate and prices without change. English 80 % quoted at £11. 10/, f.o.b. shipping port.

Steel Rails.—Market has been quiet and prices are rather easy. Heavy sections quoted at £4. 3/9, f.o.b. shipping port.

Steel Billets.—Dealings are still moderate and the market is without change. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

Steel Blooms.—The market remains dull and unchanged. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Steel Slabs.—Sales light and prices without change. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

Old Iron Rails.—Very moderate business and sellers' prices unchanged. Tees quoted at £2. 15/ @ £2. 17/6 and Double Heads at £2. 17/6 @ £3, f.o.b.

Scrap Iron.—Market remains dull and rather weak. Heavy Wrought Iron quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Small business and sellers' prices unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Manufactured Iron.—Business is slow and prices still in buyers' favor, but showing no radical change. We quote, f.o.b. Liverpool:

Staff, Ordinary Marked Bars	8 5 0 @ 8 10 0
" Common	6 5 0 @ 6 7 6
Staff, Bl'k Sheet, singles.....	7 5 0 @ 7 10 0
Welsh Bars (f.o.b. Wales).....	5 7 6 @ 5 10 0

Tin Plate.—The market closes quiet and easy. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	14/ @ 14/6
IC Bessemer Steel, Coke finish.....	12/ @ 12/3
IC Siemens " ".....	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20.....	12/ @ 12/3
Charcoal Terne, Dean grade.....	12/ @ 12/3

Pig Tin.—No change at the close, market quiet. Straits quoted at £92. 17/6 for spot, and £92. 17/6 for three months' futures.

Copper.—Rather slow market, but prices steady at the close. Merchant Bars quoted at £44. 7/6 spot, and £44. 17/6, three months' futures. Best selected, £48. 10/.

Lead.—Dealings moderate, but the market steady at £10. 5/ for Soft Spanish.

Spelter.—The market continues slow and easy at £20. 15/ for ordinary Silesian.

The Shoenberger Trouble.

(By Telegraph.)

Being unable to arrange a satisfactory steel scale with the Amalgamated Association, Shoenberger & Co. of the Juniata Iron and Steel Works, Pittsburgh, started up their Bessemer plant on Tuesday of this week with non union men. As soon as it was put in operation the men employed in the other departments working under the Amalgamated Association iron scale, which had been signed by the firm, immediately quit work. This action will probably result in the entire plant of this firm being made non-union. Shoenberger & Co. are now advertising for heaters, rollers and other workmen, to whom they agree to pay Amalgamated Association price. They also advertised for a plate mill roller, to whom they agree to pay \$3000 per year salary. This firm agreed to sign a scale similar to that granted Jones & Laughlins, Limited, but it was refused by the Amalgamated Association.

HARDWARE.

Condition of Trade.

THE REPORTS of good demand and favorable prospects for the coming season, which we have for some weeks been giving from almost every section of the country, continue, and conditions seem to be growing steadily more encouraging. The amount of business is certainly greater. This will apply to the general line of Shelf Hardware. Among seasonable goods special activity is noticeable in the demand for Ammunition and Fire Arms, which seems to promise a very large business in this line until the end of the season.

Chicago.

(By Telegraph.)

Hardware jobbers report a larger volume of business in Shelf Hardware and House-Furnishing Goods. Steady gains have now for some time been reported from week to week, with excellent prospects for a continuance of the same satisfactory condition of trade. A very fair percentage of straight Hardware is found in nearly every bill. Staple goods are moving freely in increasing quantities, but for some indefinable reason prices are weaker. This is remarkable in view of the attitude of manufacturers. They have had no reason to lower their prices, and for the next 60 to 90 days it seems to be impossible for jobbers to replace the stocks which they are now distributing, except at a considerable advance in cost. Heavy Hardware is in good demand, but the rush is about over in Finished Iron and Steel. Jobbers report that the mills are now getting into such shape that they can at least promise deliveries to those who are in need of an early supply of Iron and Steel, and this, of course, affects the demand, which has latterly been so active. Wagon stock is moving fairly well, but the leading trade is with makers of heavy farm wagons and not so much in the direction of light vehicles. The buggy trade was a feature of the business a short time back, but it is now very much less conspicuous.

St. Louis.

(By Telegraph.)

Jobbers are kept busy, and the outlook for fall business is decidedly encouraging. At the moment the demand calls for Shelf and Builders' Hardware, Coal Hods, Stove Boards, Wire Nails, &c. Prices are fairly steady, and there are no particular changes to note, with the exception of Wire Nails, which are not quite so strong as last reported. The demand for Guns and Ammunition has shown considerable improvement, more particularly from the Northwest, and jobbers are filling large

orders for these goods. Collections are above the average.

Philadelphia.

SUPPLER HARDWARE COMPANY.—Since our last report trade has made a few strides toward improvement, but the change has been more noticeable during the last week, when many orders have been coming in for nice assorted lines of Hardware and Cutlery. From the manufacturers' side, we have reports of a more active demand for their various lines. Some manufacturers have advised us of calls having been made upon them by the jobbers for advance shipments of specifications entered for September shipment. This is, however, probably more the exception than the general rule, of course. A personal experience proves to us, however, that the manufacturers in many lines are well supplied with orders, and unable to make as prompt shipments as are desired. Among them, we find that the Bolt manufacturers, notwithstanding the lateness of the season, have had more to do than they could handle with any degree of promptness. The Screw manufacturers, with the assistance rendered them by their voluntary cut down in their production, have largely reduced their stocks and are provokingly slow in completing specifications they have entered. As the stocks of Screws in hands of both jobber and retailer are comparatively light, it has made the condition of the Screw market much firmer than has been noticed for some time. The File manufacturers also seem well supplied with orders, and more dilatory in completing them than they were during the spring months. The Axe manufacturers may be an exception to the above line, as we find they have made preparations much more heavy than usual to supply the trade in order to avoid a repetition of the disappointments in shipment that have been caused during the two years past. The general impression seems to be strong that the Hardware trade from now until the end of the year, while not up to desires, will most likely be fully up to that of past seasons.

Omaha.

LEE - CLARKE - ANDRESEN HARDWARE COMPANY.—Summer may be considered as virtually over, and a retrospect of the season's trade develops facts and figures confirming our previous reports, and in the volume of business transacted it has been eminently satisfactory and largely in excess of any previous season. Fall trade is naturally the absorbing topic at this time. As a rule the corn crop of Nebraska has been pronounced out of danger, and with a short crop in many of the old corn-growing States, prices on this cereal, it is argued, are bound to be good. With money plenty among the producers of the

State we are unable to see what can prevent a large and active jobbing trade in the future. Last year's large crops enabled the farmers to work out of debt, paying off the claims of the previous bad year. This season's crop will put them in splendid shape, a fact which they fully realize. There was probably never a time in the history of the State when the country retail trade was in better condition than it is at the present time, or when the prospects for continued prosperity were any brighter.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—We have very little news to communicate beyond what was said in our last. The prospects continue good for a large trade and good collections this fall. There will be some shrinkage from last year in the amount of grain produced, but as last year was a phenomenal year we cannot complain. The collections continue good for this time of the year. The recent strikes have interfered some in obtaining supplies, but delay was only temporary.

New Orleans.

A. BALDWIN & Co.—Business in this section continues fairly active, and the continuation of the bright, sunny weather that we have been having for the past eight or ten days will cause confidence to be once more restored as pertaining to the coming crops. All seem to be preparing for a good fall trade, and are buying much more liberally than they have for the past four months. The demand for Shelf Hardware has been steadily increasing, and the merchants in New Orleans are beginning to realize the benefits derived from the exceedingly large rice crop, and a brighter feeling is being felt in anticipation of a very good fall trade.

Louisville.

W. B. BELKNAP & Co.—Business continues to improve. The settlement of labor troubles and the consequent resumption of work at factories is permitting trade to resume its normal channels. Confidence is re-established and money is easy. Projects which promise well are not difficult to promote, and it really looks now as if we were going to reap the reward of our bountiful harvests, no matter who is made President. In short, to most people business is more interesting than politics, and how a man votes is not half so important as will he buy and pay.

The rolling mill here is in full operation in all departments, and is likely to be kept busy for some time to come. Prices are not high, but they promise to be well maintained, and those who expect any marked declines will, we opine, be disappointed. Some articles are scarce or hard to get—Chain, Boiler Rivets, Structural Iron, Beams, Angles, &c.—and it may be the first of the year before the manufact-

Chicago, by Telegraph.—The large buyers now appear to be in some need of Wire Nails, and are reported to be sending in good orders to the manufacturers. Prices are consequently quite firm at \$1.73 to \$1.75, Chicago, on reasonably large lots from factory. The Salem Wire Nail Company have adjusted the labor difficulty at their Findlay mill, and it resumed operations this week. All the factories are reported to be well filled with orders. Cut rates on lake freights have recently been of benefit to the St. Paul and Minneapolis jobbers, who have been enabled to buy Nails at almost Chicago prices. But these rates are expected to advance soon, which will remove this advantage. Jobbers are not maintaining the full price of \$1.85 out

of stock, but continue to quote it as the regular rate for small orders.

Barb Wire.—Makers generally are full of orders and the demand continues good for the season. We quote \$2.60 to \$2.65 as the mill price on Four-Point Galvanized for large orders, figures which can only be shaded for exceptionally desirable specifications. New York quotations are \$3.10 for small lots and \$3 by the carload.

Chicago, by Telegraph.—Barb Wire manufacturers note a great difference in trade the past week as compared with previous weeks. Their business has largely increased from such localities as Indiana, Tennessee, Iowa and Missouri. Thus far the Northwest has not shown much activity, as the farmers in that locality have been engaged in harvesting their crops. The market locally is a little weaker, notwithstanding the improved business. While jobbers still adhere to their quotations of \$2.40 for Painted and \$2.90 for Galvanized, they are making concessions in special cases.

Joliet.—There is no material change in the local situation this week. A fair sprinkling of good orders have been filled in full carload lot shipments at \$2.25 for Painted and \$2.70 for Galvanized Barb Wire, and \$2.20 to \$2.70, as to finish, for Fence Staples. The manufacturers' stock of Fence Wire is not large, by any means, but they say that buyers can rest assured of prompt shipments on their orders placed during the fall season.

Brass and Copper Goods.—The market on Copper and Brass Tubing, Sheets and Wire seems to indicate a firmer feeling among the manufacturers. They are generally getting better prices, and this is to be accounted for by the very large demand. Some of the mills are crowded to their utmost, and there is much difficulty experienced in getting prompt deliveries.

Wrought Iron Pipe.—All of the makers are busy and are becoming stronger in their views, with a disposition to reduce extra discounts. Available stocks are small, and it is difficult to place large orders for prompt delivery.

Glass.—It is reported that the agreement recently signed at Columbus, fixing September 24 as the date for starting the Glass factories, contained a proviso to the effect that a certain number of pots must be represented in the agreement to make it binding; and if this number was not included, the manufacturers who signed could withdraw their names and start their plants as soon as they saw proper. We understand that the required number of pots were not represented, and that the manufacturers who signed the agreement have been released. The starting of factories before the last of September is regarded by different manufacturers in different lights, some fearing that such a movement will cause much irregularity in the Window-Glass trade, while others contend that never before was there a better prospect for higher prices. Private advices from a Pittsburgh manufacturer state that his factory will blow new

Glass September 7, which means that this factory will be started September 1. He further states that 40 per cent. of the Pittsburgh factories will start in September, and the balance about October 1, and that about the same ratio is found in the West. The New Jersey factories will probably start September 1. It is understood that a meeting of the New York and Boston importers was held in Boston on August 31, the object of the meeting being to consider changing the list price of imported Glass and other matters connected with their trade. Trade remains quiet and quotations unchanged, as follows: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 80 and 5 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Trade Items.

THOMPSON MFG. COMPANY, Elkhart, Ind., in their advertisement on page 104 of this issue, call attention to Thompson's Universal Trucks, which are adapted to cases and crates of any length and width, and of any weight up to 4000 pounds.

H. H. & C. L. MUNGER, 142 Lake street, Chicago, have been appointed general agents for the sale of Colt's Eccentric, Screw and Cabinet-Makers' Steel Bar Clamps, manufactured by the Batavia Carriage Wheel Company of Batavia, N. Y. These Clamps have a movable arm or jaw and a self-adjusting foot. The Cabinet-Makers' Clamp takes in any width of work up to 8 feet, while odd sizes desired are made to order. The same firm have also secured the Western agency for Geo. H. Hathorn of Bangor, Maine, manufacturer of all kinds of Lumbermen's Boot Calks.

THE CHICAGO HORSESHOE COMPANY, whose works are at East Chicago, Ind., have established their main offices in suite 1103, Ashland Building, Chicago, which is in the immediate vicinity of the Hardware district. The sudden death of Superintendent Ingraham, although deeply deplored by all his associates, has not in the least interfered with the plans of the company, as they were fortunately in possession of practical men fully competent to meet the emergency. Additional machinery for the enlargement of the works has been ordered, and will speedily be put in place, to enable the company to meet all the requirements of the trade.

FRED. KRONER who has been in the Hardware business at La Crosse, Wis., for the past 25 years, is now erecting a large and conveniently arranged building which he will occupy when completed as an exclusive wholesale Hardware store. The building will be 41 x 172 feet, three stories and basement.

In *The Iron Age*, August 18, in a paragraph under the heading of "It Is Reported" it was stated that J. Beuret, dealer in Hardware and Tin, Auburn, Ind., was selling out. We are advised, however, that while Mr. Beuret has been selling out it is not his intention to retire from business, his purpose being to dispose of his old stock of Hardware, and to equip the store with a newer and better stock.

W. D. SUTTON has opened a new Hardware store at Jolly, Clay County, Texas,

and desires to receive copies of such catalogues, circulars, &c., as are usually sent to the Hardware and Harness trade in that State.

OTTO KREBS, importer of Hardware, Cutlery and Tools, has removed from the northeast corner of Fifth and Commerce streets, Philadelphia, to 512 Commerce street, where he will carry a large assortment of German Hardware and Cutlery, &c.

EARLY IN THE SEASON the employees of the Hardware jobbers in Cleveland presented a petition to their employers, asking that the stores be closed at 3 o'clock on Saturdays during the summer months. The jobbers, together with a number of retail stores and factory supply houses, concluded to close at 1 o'clock instead, the half-day holidays to end on August 13. When that date was reached, however, the time was generously extended to September 1. The boys have thoroughly appreciated their holidays and made good use of them. Hardware baseball clubs were organized in three of the houses, the result of the games at the end of the season being as follows:

	Played.	Won.	Lost.
The W. Bingham Company.....	6	3	3
The McIntosh Hunting-ton Company.....	6	3	3
The George Worthington Company.....	6	3	3

WILLIAM S. SMITH has purchased the business formerly carried on by A. B. Coley at South Norwalk, Conn. The business will hereafter be conducted by him under the style of the South Norwalk Hardware Company.

THE STOCK of Hardware, Stoves, Agricultural Implements, Bicycles, &c., carried by S. E. Tilton, Prairie Depot, Ohio, was completely destroyed by fire on the 20th inst. The loss was \$13,000, there being an insurance of \$7000. Mr. Tilton will resume business at an early date. He will be glad to receive catalogues, price-lists, &c., from manufacturers and jobbers in the lines above indicated.

OSSAWAN MILLS COMPANY, Norwich, Conn., manufacturers of Picture Wire, Sash Cord, Wire Goods and Spool Wire, announce that they have engaged J. J. Brinkerhoff, who will visit the Hardware trade in their interest, starting out September 1.

MERIDEN CUTLERY COMPANY, Meriden, Conn., in our advertising columns announce a new catalogue and invite dealers to send for the latest edition, which is numbered six.

THE MACHINERY, TOOLS AND DIES belonging to the firm of James Mann & Sons, Buffalo, N. Y., for making Strap Hinges have been moved to Canada. The business is now being conducted by a stock company under the name of the Mann Hinge Company. The company will manufacture a full line of Hinges on the Niagara frontier.

THE STOCK of Hardware of William Geach & Son, Granville, Ohio, was heavily damaged by fire on the night of the 16th inst.

THE PATENT FALLS HEATER, put on the market by the Enterprise Mfg. Company, 17 Milk street, Boston, is illustrated in the company's advertisement on another page. This Heater may be used over any lamp and is referred to by the manufacturers as simple, cheap, clean and causing no odor.

OUR READERS will observe the advertisement on another page in which some of the Ice Skates put on the market by the Samuel Winslow Mfg. Co., Worcester, Mass., are illustrated. It will be perceived that Dame, Stoddard & Kendall,

374 Washington street Boston, are carrying a complete line of these Skates in stock.

IN THEIR ADVERTISEMENT in this issue Sickles, Sweet & Lyon, 35 Barclay street and 40 Park place, New York, call attention to the fact that they are New York agents for the Winslow Skates. It is also stated that their fall catalogue will be issued about September 1.

D. F. SLADE of the firm of Slade & Atkins, Hardware dealers, Worcester, N. Y., has sold his interest in the business to A. L. Goodrich. The firm will hereafter be known as Atkins & Goodrich. Mr. Slade, who is referred to as an experienced foundryman, is looking for a foundry either to rent or to run by the ton. An advertisement relating to this matter appears among the Special Notices in this issue.

Champion Shot Case.

FILSON BROTHERS, Point Pleasant, W. Va., are offering a Shot case, as illustrated herewith. The oak case holds 200 pounds of Shot, having eight com-

Price-Lists, Circulars, &c.

U. S. HAY PRESS SUPPLY COMPANY, Kansas City, Mo.: Bale-tie Machine, Wire Reel, Bale Ties, Barb Wire, Fence Staples, &c. It is claimed by the manufacturers that the Bale-Tie Maker will make the loop, straighten the wire and cut it off with one movement of the lever.

THE UNION HARDWARE COMPANY, Torrington, Conn., and 95 Chambers street, New York: Ice Skates. Illustrations are given of their line of Lock Lever Skates, Extension Skate, Ladies' Lock Lever Skates, Ladies' Wood Top Skates, Donoghue Racing Skate, &c. For 1892 the same general line of men's and women's Skates are made as for the past three seasons, and in addition lines of racing and extension Skates.

MERRIAM MFG. COMPANY, Durham, Conn.: Tinware of high grade, Cash and Bond Boxes, &c. An illustrated catalogue and price list shows Cash Boxes in various styles, Letter Boxes, Double Bill and Change Box, Narrow Bill and Change Box, Office Boxes, Stamp Boxes, Post Office Boxes, Bill Head Cases, Postal Card Pockets, Envelope Cases, Docu-

folders are to be distributed by E. M. Warren while on a trip through the country on a bicycle. This will be the pioneer trip on a wheel through Western Arkansas for this firm.

MANNING, BOWMAN & Co., Meriden, Conn., and 57 Beekman street, New York, state, in a circular to the trade, that their catalogue now in press will soon be ready for delivery. They have made a general revision of list prices, some being greatly reduced and others considerably advanced, to adjust all upon an equitable and uniform basis. They remark that in their desire to introduce and make popular their goods they had taken no notice of the greatly increased cost of improvements, but in compiling their catalogue were confronted with the fact that on some of their staple patterns they were uniformly losing money.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, Ill.: Seasonable Hardware and Campaign Goods. These two lines of goods are presented in different catalogues, each fully illustrated and containing price-lists. The catalogue devoted to Campaign Goods shows Uniforms, Torches, Headware, Banners, &c., in colors. The catalogue of seasonable goods is a departure from the usual form of price currents, being in this case $7\frac{1}{4} \times 6$ inches in size, and containing 121 pages. It is stated by the above firm that it contains the largest assortment of seasonable and new goods ever before offered.

WELLS & NELLEGAR COMPANY, Chicago, Ill.: Fall circular of seasonable Hardware. The goods illustrated are Axes, Wood Saws, Cross Cut Saws, Meat Cutters, Lanterns, Huskers, Stove Boards, Coal Hods, Stove Shovels, Dampers, Stove Trucks, Stove Polish, Weather Strips, Cutlery, Toilet and Horse Clippers, Guns, &c.

EAGLE IRON FOUNDRY AND MACHINE WORKS, The John B. Morris Foundry Company, Cincinnati, Ohio: Stove Repairs, Hardware Specialties, Builders' and Plumbers' Goods, Soft Gray Iron Castings, Iron Pump Curbs, &c. A large portion of their catalogue is devoted to repairs for Cooking Stoves, Ranges and Heating Stoves.

PETER'S PUMP COMPANY, Kewanee, Ill.: Peters' Double-Cylinder Force Pumps, Pitcher Spout Brass Cylinder Pumps and Peters' Cistern Force Pump. Circulars illustrate and describe these goods.

MADDOX WIRE BELT COMPANY, Boston, Mass.: Cotton and Wire Belting. It is stated that the Wire, which is the characteristic of this patent, is cabled. Each cable, consisting of seven strands, is laid longitudinally with the warp, and then corrugated into the Belt, giving, it is claimed, tremendous strength. The point is made that all Belts are filled with a thoroughly water-proof material, protecting the wire from moisture of any kind, and penetrating the cotton warp and filling. The Belt is referred to by the manufacturers as running true and almost noiselessly adapting itself by its flexibility to all positions, closely hugging the pulleys through all changes of weather.

HOAGUE & PECK, successors to J. H. Hoague, Chicopee, Mass.: Improved Mechanics' Tools and Hardware Specialties. Illustrations are given of Tracing Wheels, Sewing Machine Screw Drivers, Marking Awls, Can Openers, Automatic Drills, Chamferer Gauges, Solid Steel Chucks, Hand Vise and Hollow Handle Tool Holders, Bit Brace Chucks, Dividers and Distance Marking Tools, &c.

CHAS. J. GODFREY, 11 Warren street, New York: Special dealers' price-list and discount sheet dated August, 1892. Attention is called to this catalogue as an extra effort to reduce stock, and confidence is felt that the prices quoted will accomplish that result. Among the features is a net price on Metallic Ammunition, not heretofore quoted in this way. Among other goods are complete lines of Shot Guns, including Parker's Hammerless, Reming-



Champion Shot Case.

partments, each holding a bag or 25 pounds of Shot. Each compartment has an adjustable tube attached to the bottom, made to adjust to $\frac{1}{4}$ pound, and from which a customer can be supplied with any amount called for. Each tube can be adjusted by any pair of scales, and when once adjusted the Shot need not afterward be weighed. Each time a spring is compressed $\frac{1}{4}$ pound of Shot drops down, the operation being repeated until the required amount is withdrawn. The compartments may be numbered to meet the requirements of trade.

ment Cases, Filing Cases, Paper Folders and Check Cutters, Square Cake and Bread Boxes, Round Cake Boxes, &c. The manufacturers refer particularly to their Cash Boxes as combining every desirable feature as to stock, locks, workmanship and finish.

CONTINENTAL WIRE COMPANY, St. Louis, Mo.: Genuine Glidden and Baker two-point and Lynam four-point Barb Wire, Baling Wire, Galvanized Wire, Fence Staples and Wire Nails. An illustrated postal card urges early orders for these goods.

GEO. SENDEL HARDWARE COMPANY, Fort Smith, Ark.: Folder calling attention to Buggies, Wagons, Stoves, Machinery, Plows, Hardware, Barb Wire, &c. These

ton, Colt, Winchester and Belgian makes; Rifles, including Martin Repeater, Model 1891; Winchester, Model 1892; Stevens' Fire Arms, Reloading Tools, Gun Implements, Revolvers and Single-Action Pistols, Shooting Coats and Hats, Leather Goods, Bicycles, &c.

HIBBARD, SPENCER, BARTLETT & CO., Chicago, Ill.: Lamps and Lamp Goods. Their large catalogue, No. 203, contains 164 pages, devoted exclusively to these goods. An unusually large and complete line of desirable goods are found in this catalogue, the issuing of which has been somewhat delayed, in order to include new designs and the latest goods out. The central-draft lamps shown are referred to by the firm as perfect in combustion, giving large light, with an absence of odor, and embodying simplicity of construction. Prominent among the illustrations are those of Mammoth Lamps, Library Lamps, Piano Lamps, Banquet Lamps, Chandeliers and Hall Lamps, Stand Lamps, Glass Lamps, Lamp Shades in silk, &c. Great care is taken in packing and shipping orders, and special attention is given to mail orders.

THE COLUMBIA GREY IRON COMPANY, Columbia, Pa.: Hardware, Iron Novelties and House-Furnishing specialties. Their catalogue of 51 pages gives illustrations, with descriptions, of Hatchets, Hammers, Shelf Brackets, Stove-Lid Lifters, Toy Sad Irons, Sad Iron Stands, Can Openers, Clothes Line Hooks, Pliers, Compasses, Foot Scrapers, Vises, Shutter Bower, &c.

FREEPORT BICYCLE MFG. COMPANY, Freeport, Ill.: "Elliptic" Safety Bicycles. Illustrations are given of Elliptic Pneumatic Scorchers and Elliptic Pneumatic Roadster. Descriptions of the same accompany the cuts, in which the superiority of these wheels is made prominent.

E. B. ESTES & SONS, New York. Locked Corner Packing Boxes. These are referred to as being superior for all purposes for which paper boxes have heretofore been used, and for a great variety of other purposes.

GREEN, BROS. & CO., Sauquoit and Clayville, N.Y.: General and Builders' Hardware, Stoves, Agricultural Implements, &c. This first annual catalogue of 72 pages, issued by the above firm, contains illustrations and descriptions of Agricultural Implements, Carts and Wagons, Pumps, Bicycles, Stoves, Furnaces, &c. An alphabetical list of seven pages enumerates goods kept in Tinware, House Furnishings and Farming Implements.

MOUNT CARMEL BOLT COMPANY, Mount Carmel, Conn.: Tire, Stove, Sink, Bung-head and Headless Bolts, Norway Iron Rivets, Flat-Head Rivets, Washers, Wood Screws, &c.

THE CHILLICOTHE MFG. COMPANY, Chillicothe, Ohio. A pamphlet relating to Six Leaders. The illustrations and descriptions are of six numbers of their Quick-Grinding Coffee Mills.

CHICAGO HARDWARE MFG. COMPANY, Chicago, Ill.: Supplement to catalogue of 1888, with descriptions and illustrations of new goods. The goods shown are Mortise Latches, French Window Locks, Hotel, Dead, Hospital and Asylum Locks, Flat-Keyed Office Locks, Knobs and Roses, Closet Indicator Bolts, Meeting Rail Sash Locks, Heavy Mortise Flush Bolts, &c. A catalogue of strikes and a complete price-list accompanies the supplement.

EDWARD MILLER & CO., Meriden, Conn., 10-12 College place, New York: Illustrated supplement, No. 38, giving full descriptions and list-prices of large additions to their line of Rochester and other Lamps, showing many new designs in Library and Hall Lamps, Pendants, &c. Their assortments Nos. 407 and 408 having Bisque Decorations are referred to as ready sellers, and attention is called to their Patent Lock Ring for putting in and re-

moving fount from below, as applied to Rochester Library Lamps.

JUSTUS ROE & SONS, 52 Broadway, New York: Steel Tape Measures, Pantographs, Traverse Table Blanks and Pocket Protractor, Square, Triangle, Rule and Scale combined in one. Particular attention is directed to the Electric Reel and Aluminum Plated Steel Tapes.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Catalogue No. 214, Guns, Pistols and Sporting Goods. The catalogue contains 177 pages, illustrating and describing these goods, with list prices.

STANDARD FIBER WARE COMPANY, Mankato, Minn.: Standard Fiber Ware. Illustrations are given of Water Pail, Bowl and Pitcher, Cuspidor and Mat, Floor and Table Mats, Fire, Horse, Prison, Dairy, Sugar and Buggy Pails, Wash Basins, &c. These goods are finished in maroon, brown gray, blue, black, green, red, white, &c.

LANDERS, FRARY & CLARK, New Britain, Conn., and New York.: Ivory Antique Table Cutlery and Flatware. An illustrated pamphlet shows various patterns of Ivory Antique, adapted to a large variety of goods. This material for handles is referred to as durable as iron and beautiful as the finest carved ivory.

SANSON CUTLERY COMPANY, Wilkes-Barre, Pa.: Their catalogue, under date August 1, of 48 pages, contains illustrations of an extensive line of Table Cutlery, Butcher Knives and Kitchen Knives. They state that they shall continue to manufacture only the finest class of the goods in their line.

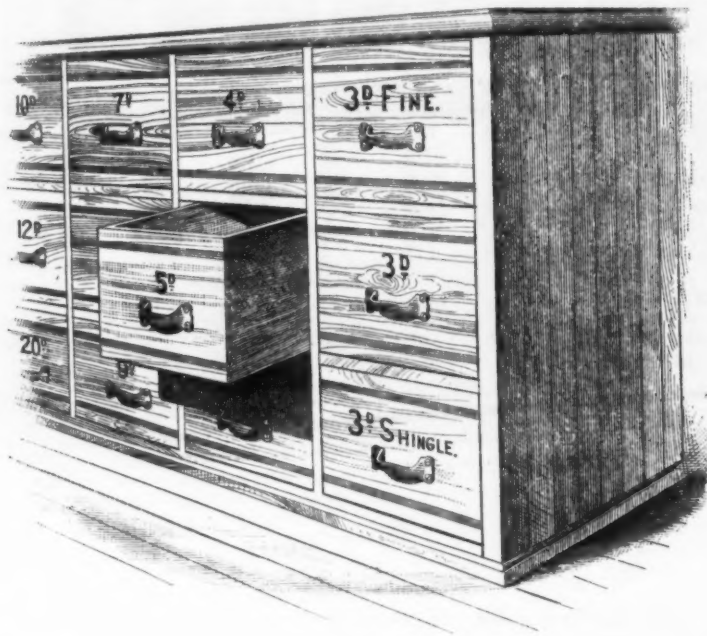
C. SIDNEY SHEPARD & CO., 23 and 25 Randolph street, Chicago: Illustrated catalogue of the products of the Buffalo Stamping Works. This is a catalogue of 224 broad pages, illustrating, with price-list, an immense variety of Deep and Shallow Stamped Ware, Pieced Tinware, Wire Goods and General House-Furnishing Goods. In the opening pages of the

full line of Tinnery Tools and Machinery, in addition to their own manufactured products. The catalogue is well worthy of a place on the shelves of every dealer in Tinware and House-Furnishing Goods, and we understand that a very wide distribution of it has been provided for.

THE T. C. RICHARDS HARDWARE COMPANY, West Winsted, Conn.: Upholstery, Fancy and General Hardware. The line includes Brass Screws, Bright Wire Goods, Picture Nails, Picture Hooks, Coat and Hat Hooks, Bird Cage Hooks, Chandelier Hooks, Towel Racks, Sash Lifts, Hammock Hooks, Hitching Rings, Faucets, Porcelain Picture, Drawer and Shutter Knobs, &c. In Brass Goods they manufacture Pole Trimmings, Curtain Chains, Shade Pulls, Tassel Hooks, Artistic Broom Holders, Match Safes and Easels, Stair Buttons, Vestibule Brackets and Rings, Ornamental Bangles, &c. Plain and Fancy Sheet Brass and Steel Goods are made to order, also special Wire Goods in quantities only. The catalogue of 186 pages is fully illustrated, giving price-lists and descriptions, and is accompanied by a discount sheet. It is handsomely bound in cloth, and contains views of the factory. Referring to the goods listed the manufacturers remark that many old designs, by a constant demand have become staple; to these they have added a large line of new goods of the latest designs and superior finish. Everything about the catalogue, from its general arrangement to the fine quality of paper used, indicates care and good judgment.

Nail and Belting Cases.

JOSEPH H. DAY, Lewiston, Maine, has favored us with photographs, from which the accompanying illustrations of store arrangement have been produced. The two cases were added to his store fixtures last winter, and are found very



A Drawer Nail Case.

catalogue full-page illustrations are given of the offices and stores of the firm at Chicago and Buffalo and the works at Buffalo. An index is then given of the articles enumerated in the catalogue, covering three pages of three columns to the page. The assortment of Metal Goods and Wares here presented is simply bewildering in its magnitude. The goods are most attractively shown in the illustrations. Wherever it is desirable colors are used, as, for instance, in connection with Pearl Agate Ware. The firm carry a

convenient. The Nail case has 36 drawers on each side, each drawer being 15 x 12 inches in size and 17 inches deep. They are made of ash, 1 inch thick, each holding a keg of Nails. Sargent's No. 504 door pulls were used for drawer pulls, and each drawer has a strip of 1 x 1/8 hoop iron on each side of the bottom. Two 1/2-inch sash rollers are inserted in the partitions against which the drawers run to

prevent them from binding, and to allow them to pull out more easily when full of Nails. The top of the case is used for a counter.

In the Belting case the partitions are put far enough apart to accommodate the various sizes of Belt carried in stock. The

That Theo. Eipenbach has disposed of his interest in the Delphos Hardware Company, Delphos, Ohio.

That Ankney Bros., Implement dealers, Ohio City, Ohio, have disposed of a one-third interest in their business.

That Stringer, Dexter & Co., Munnsville, N. Y., dealers in Agricultural Im-

That Monk & Weaver have recently succeeded Blanchard & Harrison in the Hardware business at Wakefield, Neb.

That the Hardware store of Mullen & Wike, Aberdeen, S. D., was entered by robbers on the 15th inst., and goods and cash to the amount of \$150 taken. The burglars have not yet been apprehended.

That the Hardware establishment of William Weber & Co., Watertown, Wis., was burglarized on the 15th inst. A quantity of Revolvers, Razors and other Cutlery was secured by the thieves.

That M. W. Upton has sold out his Hardware business at Camden, Maine, to L. C. Barker of East Vassalboro. Mr. Barker will not continue the business, but will close out the entire stock.

That F. L. Sowle & Co.'s Hardware store, New Bedford, Mass., was visited by burglars on the 12th inst. The stolen goods included a large quantity of Razors and Knives.

That B. A. Breakey has been succeeded in the Hardware business at Los Angeles, Cal., by W. W. Douglas.

That List & Schuler are a new Hardware firm at Le Roy, Ill.

That L. P. Curd & Co. have succeeded the wholesale firm of Sievers-Carson Hardware Company, Louisville, Ky.

That the stock of Water & Weiss, Hardware dealers, Belding, Mich., was recently damaged by fire.

That A. J. Davidson & Co., Helena, Mont., are closing out their Implement business.

That James Forsythe, Passaic, N. J., has admitted Warren T. Bell as a partner in his Hardware business.

That Sawyer & Pennington, North Yakima, Wash., dealers in Hardware and Implements, have dissolved partnership, and Mr. Pennington is now conducting the business.

That C. M. Edick's Hardware store at Benton Harbor, Mich., was recently damaged by fire caused by a lamp explosion.

That F. Godenschwager's Hardware store at Schuyler, Neb., was robbed of two dozen Razors and Knives on the 7th inst.

That George W. Pecan of Simsbury, Conn., will open a Hardware store in Bottsford's Block, Greenfield, Mass., on August 22.

That J. P. Ward, Hardware and lumber, Lancaster, Cal., has been succeeded by the San Pedro Lumber Company.

That H. L. Reed has entered the Hardware business at Buda, Ill.

That Patrick & Luthy, Hardware dealers, McGregor, Iowa, have removed to Des Moines.

That J. D. Ross, Hardware dealer, Clinton, Minn., has been succeeded by Ross & Benson.

That John Holler, Hardware merchant, Rockford, Minn., has sold out to M. B. Bryant.

That the stock of G. H. Ackerman, dealer in Hardware, Albany, N. Y., was recently damaged by fire. He was insured for \$6000.

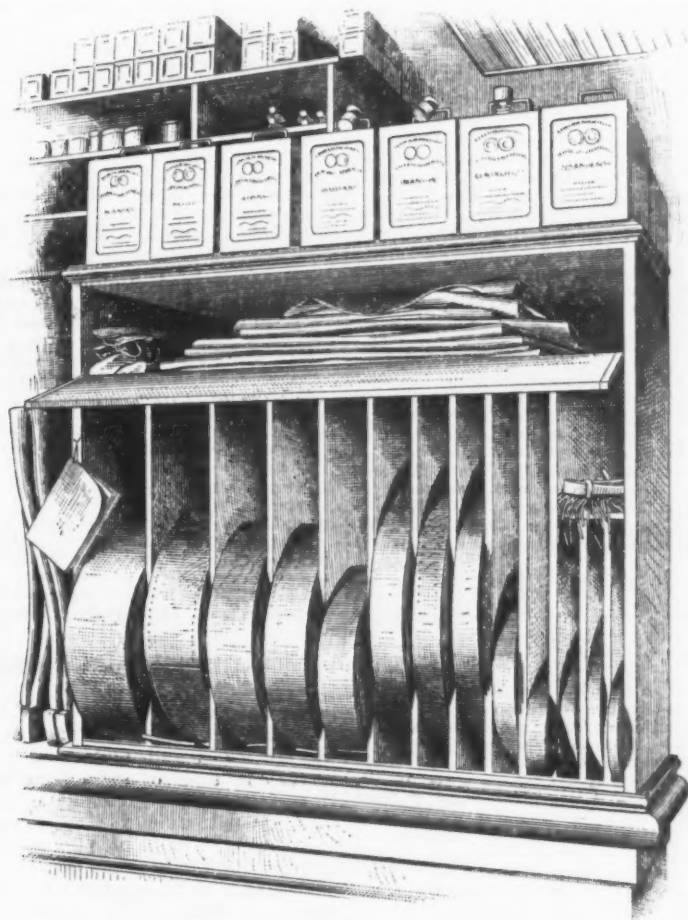
That R. J. Gin has succeeded K. Smith in the Hardware business at Moro, Ore.

That E. J. Fuller's Hardware store at Kendall, N. Y., was burglarized a few days since.

That C. V. Burke & Co. have purchased John McNevin's Hardware store at Altoona, Pa., and will hereafter conduct the business.

That Richardson & Bro. of Snow Hill will start a Hardware store at Pokomoke, Md.

That W. H. Glidden and I. D. Brown will soon erect a building at Marianna,



Case for Belting and Lace Leather.

space above is used for Lace Leather, and has a hinged door to keep it from the dust.

It Is Reported—

That Lincoln Bros.' Hardware store at Kendrick, Idaho, was destroyed by fire on the 16th inst. The loss was \$6000, fully covered by insurance.

That the increasing trade of Malven Gordon & Co., Hardware merchants, Port Jervis, N. Y., has made necessary an enlargement of their store. It is expected that the addition determined upon will be completed by October 1.

That Herbert L. Mills, Hardware merchant, New Britain, Conn., will be married to Miss Bessie D. Kendall of Chicago on the 31st inst.

That F. E. Williams is now conducting the Hardware business formerly carried on by George Paddock, Homer, N. Y.

That F. A. Ferguson, Hardware dealer, Lyons, Neb., has sold out to Mr. Beck.

That Timmins & Moore, dealers in Harness and Hardware, Wilsonville, Neb., have been succeeded by C. M. Kincaide.

That the stores of Frank Briggs and Crissman Bros., Hardware dealers, Delta, Ohio, were damaged in a recent fire at that point.

That Miller & Rone, Hardware dealers, Lewisburg, Tenn., have dissolved.

That Davidson & Eckerman, Implement dealers, Sib'ey, Iowa, have been succeeded by Eckerman Bros.

plements, have been succeeded by the Munnsville Plow Company.

That the estate of A. Sandrock, Hardware, Virginia City, Nev., has been burned out.

That A. Ferland, Hardware merchant, Everett, Wash., has been succeeded by Ford & Thompson.

That Geo. Uttermark & Co., Hardware merchants, Clintonville, Wis., will remove from that point.

That a new Hardware store will be opened at East Oakland, Cal., by Taylor & Anseom.

That P. C. Fuller & Co., formerly of Waterville, Kan., have opened a Hardware store in the Simpson Block, Kansas City, Kan.

That George D. Parmalee, Rochester, Minn., has removed his Hardware stock into the building formerly occupied by Stebbins & Co.

That Gaines & Cummings, Fairfield, Iowa, have sold their Hardware store to Louis and Frank Gaines. The style of the new firm is Gaines Bros.

That a new firm, under the style of Hillman, Washburn & Co., are about to enter the Hardware business at New Bedford, Mass.

That A. G. Alston has bought the Hardware stock of J. C. Eaton & Co., East Hardwick, Vt., and will continue the business.

Texas, to be used as a hardware store and Tin-shop.

That James H. Stone, Hardware dealer, Decatur, Ind., has sold out.

That Kirkpatrick & Co., dealers in Hardware, Pierceton, Ind., have dissolved.

That W. P. Bump & Co., Hardware merchants, Searsboto, Iowa, have sold out their stock.

That J. P. Rogers & Co., Hardware, Boston, Mass., have admitted Charles N. Alexander to partnership.

That A. Sanford, Hardware merchant, Caro, Mich., has sold out to D. T. & F. Lazelle.

That T. N. Young, dealer in Hardware, McCook, Neb., is selling out.

That R. J. Bennett, Portland, Ore., is closing out his Hardware stock.

That the Ferguson Hardware Company, Sault St. Marie, Mich., have been incorporated with a capital stock of \$30,000.

The Nebraska Hammer.

THE ACCOMPANYING CUT shows the design of the Hammer with which Mrs. Potter Palmer is to drive the last nail in the Woman's Building at the World's Fair. The handle of the Hammer will be composed of light and dark woods alternating, and encircled by a broad band of gold, on which will be en-



The Nebraska Hammer.

graved, "From the Women of Nebraska." The head of the Hammer will be of solid silver, and on the face will be the seal of Nebraska in gold relief. Draping the Hammer and handle will be the United States flag wrought in gold. For each State in the Union there will be a diamond star, while the flagstaff will be of pearl surmounted by a golden eagle. The Hammer was designed by the women of Nebraska, and the precious tool is being executed by an Omaha jeweler. The nail is to be of gold, silver and copper, and was designed by the women of Montana. The

casket in which the Hammer and nail are to be kept will be a miniature model in precious metals of the Pueblo Mineral Palace, and will be presented by the women of Colorado.

Exports.

PER SHIP MARPESIA, AUGUST 3, 1892, FOR MELBOURNE, AUSTRALIA.

By William E. Peck.—1 case Hay Forks, 1 case Shovels, 7 cases Wringers, 1 case Hardware, 1 case and 1 package Hardware, 3 dozen Handles, 1 case Tacks, 1 case Nails, 1 case Carriage Hardware, 1 case Sandpaper, 1 case Carriage Hardware, 1 case Axles, 1 case Bolts, 1 case Axles, 1 case Whips, 2 cases Carriage Hardware, 1 case Axles, 2 cases Hammers, 1 case Latches, 2 cases Wrenches, 6 cases Butts, 2 cases Hardware, 9 cases Hardware, 2 barrels Lampware.

By H. W. Peabody & Co.—102 packages Builders' Hardware, 4 packages Pumps, 1 case Farming Implements, 13 cases Builders' Hardware, 2 cases Coffee Mills, 16 cases Edge Tools, 148 packages Agricultural Machinery, 6 cases Builders' Hardware, 10 cases Horse Nails, 15 cases Hangers, 2 cases Cartridge Cases, 1 case Tools, 26 packages Builders' Hardware, 3 cases Horse Nails, 5 cases Farming Implements, 1 box Tacks, 49 cases Handles, 5 packages Hardware, 44 cases Cartridges, 1 case Rat Traps, 62 cases Handles, 3 cases Builders' Hardware, 73 cases Handles, 9 packages Wind Mills, 2 cases Builders' Hardware, 67 packages Agricultural Machinery, 23 cases Agricultural Machinery.

By Reed & Barton.—2 cases and 1 cask Plated Ware.

By Willard K. Freeman.—3 boxes Hatchets, 4 boxes Forks and Handles.

By W. & B. Douglas.—1 cask and 1 box Pumps.

By Mailer & Quereau.—4 cases Wringers, 4 cases Builders' Hardware.

By Hammacher & Delius.—4 cases Builders' Hardware, 2 dozen Hammer Handles, 2 cases Builders' Hardware.

By Alfred Field & Co.—2 cases Hardware, 2 cases Whips, 1 case Hardware, 2 cases Whips, 6 cases Bolts.

By R. H. Dana & Co.—1 case Hardware, 1 case Whipstocks, 1 case Hardware, 1 case Wood Hames, 2 cases Whips, 1 case Hardware, 3 cases Wire Goods, 14 cases Wringers, 3 cases Handles, 65 cases Axes, 2 cases Bolts, 3 cases Shovels, 1 case Axes, 2 cases Hardware, 4 cases Handles.

By Strong & Trowbridge.—45 cases Handles, 15 barrels Lampware, 5 cases Tools, 5 cases Nails, 4 cases Handles, 1 case Whip Sockets, 1 package Shears, 1 case Cartridges.

By the Coombs, Crosby & Eddy Company.—1 case Hardware, 5 cases Chalk, 5 cases Crayons.

By R. W. Cameron & Co.—5 cases Axes, 4 boxes Bolts and Nuts.

By R. W. Forbes & Son.—3 cases Carriage Bolts, 1 package Sprinklers, 1 case Drills, 10 packages Hardware, 14 cases Builders' Hardware, 2 packages Pumps, 7 cases Carriage Hardware, 89 packages Fruit Jars, 3 cases Forks, 9 cases Washing Machines, 23 kegs and 4 boxes Nails, 1 case Flint Paper, 3 cases Granite Ware, 2 cases Hammers, 1 case Scales, 1 case Coffee Mills.

By W. H. Crossman & Bro.—1 case Plated Ware, 5 cases Axes, 5 cases Lanterns, 1 case Thermometers, 10 cases Hardware, 13 cases Axes, 6 cases Loaded Shells, 2 cases Primers and Shells, 10 kegs Nails, 8 cases Hardware, 1 crate Handles, 13 cases Lamp Goods, 25 cases Hardware, 40 kegs Nails, 3 cases Cages, 60 cases Axes, 7 cases Agricultural Implements, 2 cases Hardware, 10 crates Refrigerators, 3 cases Hardware, 1 case Guns, 30 cases Pump Parts, 61 cases Hardware, 1 crate Stocks and Dies.

By McLean Bros. & Rigg.—1 case Mouse Traps, 7½ dozen Pumps, 1 case Mouse Traps, 55 cases Axes, 1 case Chain Wrenches, 2 cases Drills, 1 case Tricycles, 68 cases Handles, 2 cases Door Checks, 2 cases Pumps, 1 case Tacks, 1 case Hammers, 1 case Apple Parers, 132 cases Fruit Jars, 1 case Gun Tools, 1 package Corkscrews, 1 case Carabines, 1 case Lemon Squeezers, 21 packages Stoves, 1 box Drills, 3 cases Freezers, 9 cases Wringers, 4 cases Axes and Hatchets, 37 cases Lawn Mowers, 105 cases Cartridges, 1 case Gun Tools, 3 cases Lawn Mowers, 3 cases Axes.

PER BARK ITALIA, AUGUST 8, 1892, FOR PORT NATAL, SOUTH AFRICA.

By Norton & Son.—2 boxes Bells.
By Strong & Trowbridge.—24 crates Wheelbarrows.

By W. H. Crossman & Bro.—957 cases Agricultural Implements, 65 cases Hardware, 3000 reels Barb Wire, 1 case Shellers.

By H. W. Peabody & Co.—1 cask Pumps, 5 cases Builders' Hardware, 11 cases Bolts, 13 cases Shovels, 32 packages Handles, 1 case Rat Traps, 1 package Hardware, 3 crates Churns.

By Woodhouse & Stortz.—1 case Hammers, 8 cases Tools.

By the Coombs, Crosby & Eddy Co.—7 cases Handles, 8 cases Plow Parts, 1 case Pumps, 8 packages Scales, 3 cases Tools, 1 bale Rubber Packing, 20 cases Tools, 2 cases Shovels, 18 cases Plows, 12 cases Hardware, 1 case and 1 case Plated Ware, 12 cases Hardware, 6 cases Hardware.

PER BARK INNES, AUGUST 12, 1892, FOR PORT ELIZABETH, SOUTH AFRICA.

By Winchester Repeating Arms Company.—30 cases Cartridges.

By Corner Bros. & Co.—61 cases Agricultural Implements.

By Alfred Field & Co.—2 cases Bolts, 1 case Saws, 1 case Hardware, 22 cases Cartridges.

By Arkell & Douglas.—134 packages Hardware, 366 cases Agricultural Implements, 1 case Sandpaper, 232 cases Axes and Hatchets, 200 reels Barb Wire, 4 cases Hoes and Rakes, 1 case Guns, 5 packages Churns, 14 cases Fruit Jars, 15 cases Handles, 1 case Plated Ware, 3 cases Lampware, 85 kegs Nails, 1 case Pencils.

FOR EAST LONDON.

By the Coombs, Crosby & Eddy Company.—1 case Shovels, 1 case Hardware, 48 cases Plows.

By Corner Bros. & Co.—53 cases Agricultural Implements.

By Arkell & Douglas.—102 cases Plows and Parts, 15 kegs Nails, 13 cases Handles, 1 case Ladders, 8 packages Lampware, 15 cases Scales, 35 cases Hardware, 2 cases Stamped Ware, 55 cases Axes and Hatchets, 1 bundle Hose, 750 reels Barb Wire.

Paints and Colors.

The condition of affairs in all branches of the market is practically the same as it was last week, and, aside from a natural increase in sales of some lines of goods, there is no distinct change as compared with the situation a month ago. The movements in value of base materials are still too slight to have any decided bearing, at all events, and competition is kept within temperate lines, which operates against anything more than ordinary fluctuation in prices of goods that are in proper form for jobbing distribution. Thus far, orders involving early autumn delivery do not appear to exceed the average run for the season, neither is there anything in the contracts making for deliveries running further ahead. Still, there seems to be enough business to prevent complaints in any quarter and sufficient to arouse cheerfulness in some.

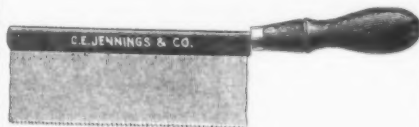
White Lead.—Corrodors of those brands that enjoy popularity in this and neighboring markets report heavier deliveries, and also a very good run of new orders, which serve to brighten prospects for the near future. In short, it would appear from the general report that the market for pure pigment is in very good shape, and not affected by the competition of lower-priced varieties. However, manufacturers of the latter keep their plant in active operation, and are doubtless distributing as much of their product as they did at the corresponding period last year. At second hands there seems to be the irregularity in prices that has been the rule rather than the exception for some time past, but manufacturers identified with the National Lead Company and those outsiders who have established a reputation for their goods keep to the old lists.

Colors, &c.—Bulk Colors for grinders' use are selling at practically former prices, and in routine manner. Dry Colors for painters' use have enjoyed very fair sale, as have the more staple lines of Oil Colors, and goods of standard quality bring full former prices. Second quality and lower grades show the usual irregularity. Ready Mixed Paints are moving in about the usual way, and Metallic Paints to about the average extent.

The Lyman Buggy Washer.

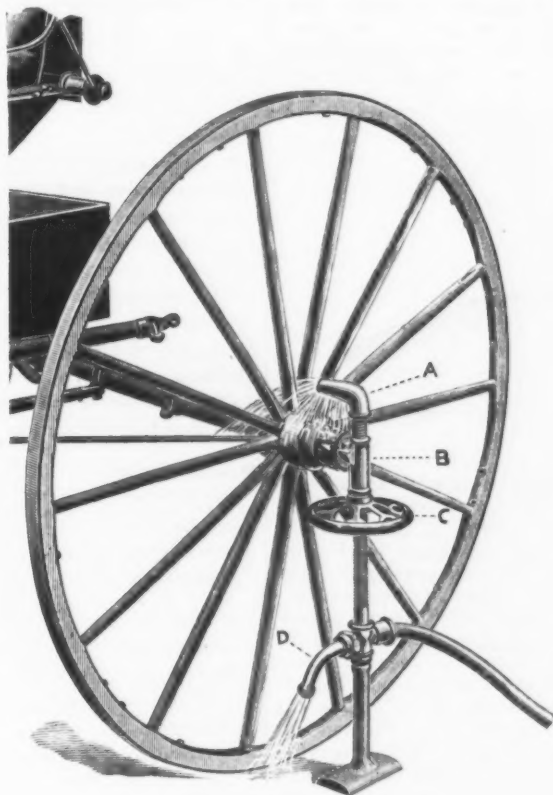
F. A. Lyman, 1228 Slater avenue, Cleveland, Ohio, is offering this washer, as shown in the accompanying cut. In operation the nut on the axle is placed in the lip projection on the side B, and the vehicle wheel is raised by turning the hand wheel C. The free end of a hose is attached to the washer by being pressed into a taper socket. The water passing through the upright flows from the slotted elbow A and the swivel nozzle D. As the wheel is rotated on its axle the water saturates every portion of it, leaving both hands of the operator free to turn and cleanse the wheel. The point is made that the washer is not only a labor-saving device, but that it saves the paint and preserves the polish of the wheel, the mud and grit being rinsed off and not scoured. In cases where it is desired to use a hose having the ordinary coupling joint, a short piece of hose about 6 inches long provided with a corresponding thread may be screwed on to the main hose; this is easily detached as occasion requires. It is remarked that one

provided with brad-awl handles, which may be readily removed for special purposes, as, for example, to execute work in some particularly difficult position. The smallest size of saw is intended for cutting in the frets of banjos, guitars, &c., and for other special work in connection with musical instrument manufacture. An-



The Jennings Brass Back Saw.

other variety is known as a brass back metal saw, and is intended to take the place of a hack saw where very fine work is to be done. It is of special value to telegraph instrument makers, for fine gas fitting and for buhl work. The saw varies somewhat in appearance from that shown in the engraving, in that the blade is slightly longer and narrower. It is tem-



The Lyman Buggy Washer.

size of washer adapts itself to all sizes of vehicles which are usually cleansed with water and also operates as a jack for oiling.

The Jennings Brass Back Saws.

C. E. Jennings & Co., 79 Reade street, New York City, have just brought out a line of brass back saws possessing features of construction which cannot fail to interest the trade generally. One variety is intended for fine dovetailing, kerfing, &c., and for use by musical instrument makers, as well as any mechanic desiring to do fine work. The saw shown in the accompanying illustration is made of carefully tempered steel of the best quality, and is offered to the trade in four sizes, having blades measuring 3, 4, 5 and 6 inches in length. The width of blade varies from 1½ to 2 inches in the different sizes. For the purpose of executing fine work in a satisfactory manner, the blade is provided with 19 points to the inch, while the steel varies from 23 to 24 gauge. All sizes are

pered extra hard, and is provided with a brad-awl handle, as in the case of the dovetailing saw. The blade is 8 inches long and 1½ inches wide, being provided with 19 points to the inch. The workmanship is first-class, and the company offer these saws to the trade with the assurance that they will do all that is claimed for them.

National Cash Register Company, Dayton, Ohio, advise us that there are over 46,000 of their registers in use, distributed in all lines of business, and in all parts of the world. The popularity attained by the register is explained by them as being due to the saving of time, worry, work and money to the proprietor; and because it calls attention to the omission to register a transaction, or to registering it incorrectly. They explain that with their cash register system nothing is taken for granted, but that the register shows the amount of cash received without counting it; avoids mistakes; insures goods sold on credit being

charged; insures money paid on account being credited, and requires all money paid out to be entered as such.

The Heller Mail Box.

W. C. Heller, 36 Valley road, Montclair, N. J., is offering this article, as illustrated herewith. It is made entirely of iron, with lock and key, and has a large covered opening at the top to receive the mail.



Fig. 1.—The Heller Mail Box.

Fig. 2 shows the box open for taking out the mail, which places the letters in an accessible position for the hand. The part of the box that turns down is counterbalanced so that it readily closes and is locked with the key. A special device is the wire rack on the front of the box for holding newspapers, packages, and other bulky matter. The point is made by the manufacturer that it is not a cheap, worth-

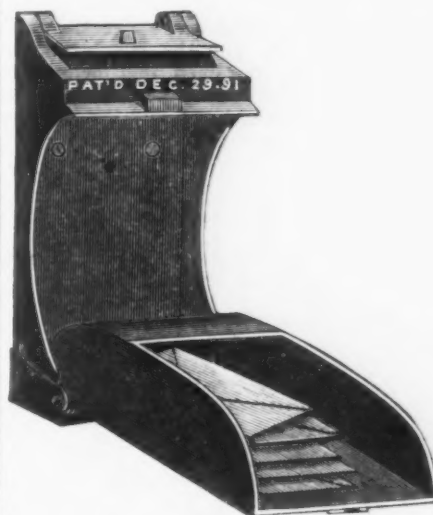


Fig. 2.—Heller Mail Box Open.

less box, but strong and durable. Two keys are furnished with each box, the boxes being supplied handsomely painted in maroon, black or green.

Taintor's Positive Saw Set.

The Taintor Mfg. Company have improved their saw set in construction, as shown in Fig. 1. Those hereafter supplied will be of the improved form and will be known as Taintor's Positive Saw Set. The saw to be set is placed in position, and the handles of the tool pressed together, resulting in the set being given to the saw, as shown in Fig. 2. One momentary pressure of the handles results in three

distinct operations, setting the saw, as follows: As the handles are squeezed together the lower one moves up, first forcing the punch forward; this clamps the upper portion of the tooth against the face of the anvil. The lower handle being unable to move further, the upper handle now

root of the tooth, thus reducing to a minimum the liability of breaking out the teeth. A front view of the set is given in Fig. 3, showing the shape and arrangement of the anvil. This has 16 faces, the four in the divisions being the same, while the Nos. 1, 2, 3 and 4 of each division

hold of the tooth nearer the point than any other set. The name Taintor's Positive is found on each set on the under side of the handle. Wiebusch & Hilger, 84 and 86 Chambers street, New York, are sole agents for this set.



Fig. 1.—Taintor's Positive Saw Set.

is pressed down, causing the jaw, which is a part of this handle, to be carried forward, and with it the saw, until it is stopped by the side of the anvil. Additional pressure upon the handles squeezes the tooth, making the set permanent. It will be noticed that the

correspond in angle of set with the same numbers in each of the other divisions. The letters refer to the depth of the set given to the tooth, the numbers indicating the angle or set given to the tooth. The sides of the anvil are at four different angles to the faces, and one of each of

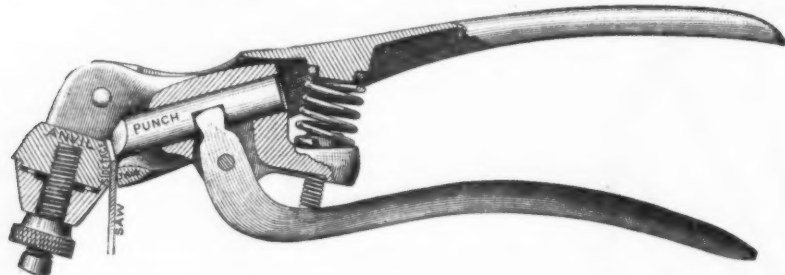


Fig. 2.—Sectional View, Showing the Manner of Clamping the Tooth Against the Face and Side of the Anvil.

punch exerts its force above the bend given the tooth, and the jaw below the bend. It is explained that before the third operation, which permanently sets the tooth, the tool has firmly grasped the tooth above and below the bend, thus

the four angles is found in all the four groups of the faces. The shortest length of faces is indicated by A; the next longest faces by B; the next by C, and the longest by D. The least angle or set in each of the four divisions is indicated by 1; the next greater angle by 2; the next by 3, and the greatest angle by 4. Thus the face No. 1 in division A will give the least possible set, and No. 4 in division D will give the greatest set. How much of the tooth is to be bent must be left to the judgment of the workman, and will vary considerably, even with the best mechanics, some setting as near the point as possible, and others down to the root of the tooth. About two-thirds of the tooth from the point downward is a good general rule. Brittle teeth are less likely to break if set near their points. In a general way, it might be well for ordinary work to set an 8 point saw on B 2; and an 11 point on A 1 or 2; but a tooth should never be set below the root. By making note, however, of the face on which a saw has been set, the same set can be obtained at any future time without any guessing. All changes from one size of tooth, or from one depth of set, to another, are made by turning the anvil. This can be readily turned by loosening the nut on the anvil shank, which is shown on the lowest point of the set in Fig. 3, so that the pin underneath the anvil may be lifted from its seat. It is stated that the pin perfectly centers the face of the anvil, and renders a slip of gauge impossible. It is claimed that the tooth which is being set and one or more on each side of it are in plain sight while the work is being done; that saws as narrow as $\frac{1}{4}$ inch including the teeth can be set; and that the punch takes

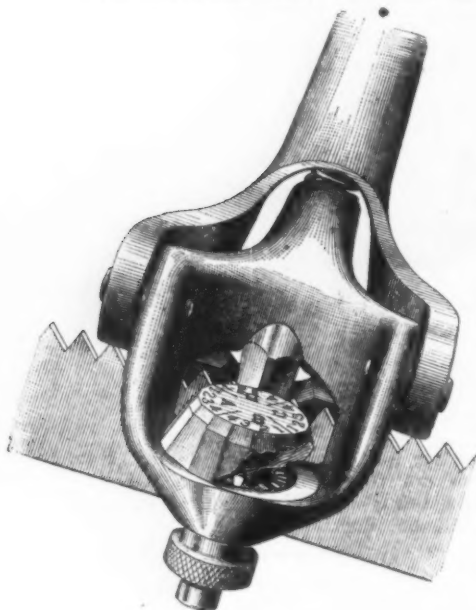


Fig. 3.—Front View of Saw Set.

preventing the tooth from curling or slipping, when the third operation gives a perfect set with absolute uniformity to the tooth. The manufacturers call attention to the fact that no dent or tool mark is left at the bending point, which is at the

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Current Hardware Prices.

AUGUST 31, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50¢ to 10¢ @ 50¢ and 10¢ @ 5% signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic..... 1 doz \$3.00, 33¢
Excelsior..... 1 doz \$10.00, 50¢
North..... 1 doz \$10.00, 50¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

Eagle Anvil, 10" x 10"..... 15¢
Peter Wright's..... 11¢
Arncliffe's Mouse Hole..... 10¢
Am. Wrought, Horse shoe brand, 11" x 11"..... 10¢
Trenton..... 10¢
Wilkinson's..... 10¢
Moore & Barnes Mfg. Co..... 33¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise, \$3.00..... 40¢
Star..... 45¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglas Mfg. Co..... 70¢
Wm. A. Ives & Co..... 70¢
Humphreysville Mfg. Co..... 70¢
French, Swift & Co. (F. H. Beecher)..... 70¢
P. S. & W. Co..... 70¢
Rockford Bit Company..... 70¢
Cook's, Douglas Mfg. Co..... 55¢
Cook's, N. H. Copper Co. 50¢
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. E. Jennings & Co., No. 10, extension..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, 1/2 set, 32¢
Lewis' Patent Single twist..... 45¢
Russell Jennings' Augers and Bits, 25¢
Imitation Jennings' Bits..... 60¢
Pugh's Black..... 20¢
Pugh's Jennings Pattern..... 30¢
Car Bits, P. S. & W. Co..... 60¢
Snell's Car Bits..... 60¢
L'Hommedieu Car Bits..... 15¢
Forstner Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 30¢

Bit Stock Drills—

Morse Twist Drills..... 50¢
Standard..... 50¢
Cleveland..... 50¢
Syracuse, for metal..... 50¢
Syracuse, for wood (wood list)..... 30¢
Cincinnati, for wood..... 30¢
Cincinnati, for metal..... 45¢

Expansive Bits—

Clark's small, \$15; large, \$35..... 35¢
Ives' No. 4, 1/2 doz..... 40¢
Swan's..... 40¢
Stearns, No. 1, 20; No. 2, 32..... 35¢
Stearns' No. 2, 48..... 20¢

Gimlet Bits—

Common..... 1 doz \$2.75 @ \$3.25
Diamond..... 1 doz \$1.25 @ \$1.50
Bee..... 45¢
Double Cut, Shepardson's..... 45¢
Double Cut, Ct. Valley Mfg. Co..... 30¢
Double Cut, Hartwell's, 1/2 doz..... 35¢
Double Cut, Douglas..... 40¢
Double Cut, Ives..... 60¢

Hollow Augers—

Ives'..... 33¢
French, Swift & Co..... 40¢
Douglas..... 40¢
Bonney's Adjustable, 1/2 doz..... 40¢
Stearns'..... 30¢
Ives' Expansive, each \$4.50..... 50¢
Universal Expansive, each \$4.50..... 50¢
Wood's..... 35¢
Cincinnati Adjustable..... 40¢
Cincinnati Standard..... 25¢

Ship Augers and Bits—

L'Hommedieu's..... 15¢
Watrous'..... 15¢
Snell's..... 15¢
Snell's Ship Auger Pat'n Car Bits..... 15¢

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common..... 1 gr. 85¢ @ 90¢
Awls, Should, Peg..... 1 gr. \$1.50 @ \$1.55
Awls, Pat. Peg..... 1 gr. 35¢ @ 38¢
Awls, Shouldered Brads..... 1 gr. \$1.30 @ \$1.40
Awls, Handled Brad..... 1 gr. \$2.50 @ \$3.00
Awls, Handled Scratch..... 1 gr. \$4.00 @ \$4.50
Awls, Socket Scratch..... 1 doz. \$1.10 @ \$1.20

Awl and Tool Sers—See Sets, Awl and Tool.

Axes—

First quality, best brands..... 70¢ @ \$7.50
First qual., other brands..... 60¢ @ 7.00
Second quality..... 5.50 @ 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1..... 3¢ @ 4¢
Nos. 7 to 14..... 0¢ @ 10¢
Nos. 15 to 18..... 47¢
Nos. 19 to 22..... 70¢
Concord Axles, loose collar..... 4¢ @ 6¢
Concord Axles, solid collar..... 5¢ @ 7¢
National Tubular Self Oiling..... 33¢

Bag Holders—See Holders, Bag.

Balances—

Spring Balances..... 40¢
Chatillon, 1/2 doz..... \$0.80 @ 0.95
Chatillon Straight Balances..... 40¢
Chatillon Circular Balances..... 50¢

Barb Wire—See Wire, Barb.

Bars—

Crow..... 34¢
Cast Steel..... 34¢
Iron, Steel Points..... 34¢

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2-inch, 82; 12-inch, \$2.25; 13 1/2-inch, \$2.75; 15-inch, \$3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82..... 50¢
Chatillon's No. 1..... 50¢
Chatillon's No. 2..... 50¢
Custer's..... 33¢

Beaters—

Egg..... 1 doz \$1.50
Dover..... 1 doz \$1.25
Duplex (Standard Co.)..... 1 doz \$1.00
Duplex Extra Heavy (Standard Co.)..... 1 doz \$1.50
Bryant's..... 1 gross \$14.00
Double (H. & R. Mfg. Co.), 1/2 gro, No. 0 \$12.00; No. 1, \$15.00; No. 2, \$36.00
Easy (H. & R. Mfg. Co.)..... 1/2 gro \$12.00
Triple (H. & R. Mfg. Co.)..... 1/2 gro \$15.00
Spiral..... 1/2 gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.)..... 1/2 gro \$9.00
Paine, Diehl & Co. s..... 1/2 gro \$24.00
Silver & Co..... 1 doz \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1; No. 2, \$2..... 20¢

Bells—

Cow..... 60¢
Common Wrought..... 60¢
Western, Sargent's list..... 70¢
Kentucky, "Star"..... 20¢
Kentucky, Sargent's list..... 70¢
Kentucky, Durham..... 70¢
Dodge, Genuine Kentucky..... 70¢
Texas Star..... 50¢

Door—

Gong, Abbe's..... 33¢
Gong, Yankee..... 45¢
Gong, Barton's..... 40¢
Crane, Taylor's..... 25¢
Crane, Brooks'..... 50¢
Crane, Cone's..... 10¢
Crane, Connel's..... 20¢
Lever, Sargent's..... 60¢
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanned..... 25¢
Lever, R. E. M. Co.'s..... 50¢
Pull, Brook's..... 50¢

Electric—

Wollensak's..... 20¢
Bigelow & Dowse..... 20¢
Taylor's..... 20¢

Hand—

Light Brass..... 70¢
Extra Heavy..... 70¢
White..... 70¢
Silver Chime..... 33¢
Globe Cone's Patent..... 25¢

Miscellaneous—

Call..... 40¢
Farm Bells..... 33¢
Steel Alloy Church and School Bells..... 40¢

Bellows—

Blacksmiths'..... 60¢
Molders'..... 40¢
Hand Bellows..... 40¢

Belting, Rubber—

Common Standard..... 70¢
Standard..... 70¢
Extra..... 60¢
N.Y.B. & P. Co., Carbon..... 60¢
N.Y.B. & P. Co., Diamond..... 50¢
N.Y.B. & P. Co., Para..... 40¢

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..... 15¢
Detroit Perfected Tire Bender..... 15¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50¢
Moore's Novelty, Mal. Iron..... 50¢
Sure Grip Steel Tackle Blocks..... 35¢

Boils—

Carriage, Machine, &c.—

Com. list June 10, '81..... 75¢
Genuine Eagle, Norway, list Oct. '81..... 80¢
Phila. pattern, list Oct. 7, '81..... 75¢
R.R. & W., old list..... 70¢
Machine, list Jan. 1, 1890..... 80¢
Bolt Ends, list Jan. 1, 1890..... 75¢

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢
Cast Iron Shutter Bolts..... 70¢
Cast Iron Chain (Sargent's list)..... 65¢
Ives' Patent Door Bolts..... 60¢
Wrought Barrel..... 70¢
Wrought Square..... 70¢
Wrt Shutter, all Iron, Stanley's..... 60¢
Wrt Shutter, Brass Knob..... 40¢
Wrt Shutter, Sargent's list..... 60¢
Wrt Sunk Flush, Sargent's list..... 55¢
Wrt Sunk Flush, Stanley's list..... 50¢
Wrt B. K. Flush, Co' mr..... 55¢

Stove and Plow—

Stove..... 60¢
Plow..... 60¢
R. R. & W. Plow..... 55¢

Tire—

Common, list Feb. 23, '83..... 65¢
Port Chester Bolt and Nut Company:
Empire list Feb. 23, '83..... 65¢
Kystone, Philadel., list Oct. '84..... 80¢
Norway, Phila., list Oct. '84..... 75¢
American Screw Company:
Norway, Phila., list Oct. 16, '84..... 75¢
Eagle, Phila., list Oct. 16, '84..... 80¢
Philadel., list Oct. 16, '84..... 80¢
Bay State, list Feb. 23, '83..... 65¢
R. R. & W., Philadel., list Oct. 16, '84..... 60¢

Borers, Tap—

Common and Ring..... 20¢
Ives' Tap Borers..... 33¢
Enterprise Mfg. Co..... 20¢
Clark's..... 33¢

Borax—

Per lb..... 0¢ @ 10¢

Boring Machines—See Ma chines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per b..... 25¢

Braces—

American Bit Brace Co.:
Nos. 10, 12, 20..... 60¢
Nos. 11, 21, 24, 27..... 70¢
Nos. 22, 23, 25..... 60¢
Nos. 13, 26, 36, 37..... 70¢
Ball Braces, net..... \$1.12 to \$1.25
Amidon's:
Barker's Imp'd Plain..... 75¢
Barker's Imp. Nickeled..... 75¢
Ratchet..... 75¢
Eclipse Ratchet..... 60¢
Globe Jawed..... 40¢
Corner Brace..... 40¢
Universal, 8 in., \$2.10; 10 in., \$2.25
Buffalo Ball..... \$1.10 @ \$1.15

Barber's—

Nos. 10 to 16..... 50¢
Nos. 30 to 33..... 50¢
Nos. 40 to 63..... 50¢
Saxton's:
Barker's Imp. Polished..... 75¢
Barker's Imp. Nickeled..... 65¢
Ratchet, Polished..... 50¢
Ratchet, Nickeled..... 40¢
Buffalo Ball..... net, \$1.10 @ \$1.15

Bartholomew's—

Nos. 25, 27 and 30..... 50¢
Nos. 117, 118, 119..... 70¢
Common Ball, American..... \$1.00 @ \$1.10
Fray's Genuine Spofford's..... 50¢
Fray's Nos. 70 to 120, 81 to 123, 207 to 414..... 50¢
Ives' New Haven Novelty..... 70¢
New Haven Ratchet..... 60¢
Barber Ratchet..... 60¢
Barber's..... 60¢
Spofford..... 60¢
Osgood's Ratchet..... 40¢
P. S. & W. Co., Peck's Patent..... 60¢

Brackets—

Shelf, plain..... 65¢
Sargent's list..... 60¢
Shelf, fancy..... 60¢
Sargent's list..... 60¢
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Hents Self, 1/2 Inch..... 0 10 9x11
Basting, 1/2 Per doz..... \$4.50 5.50 6.50
New Haven..... 50¢
Wire Goods Co..... 65¢
Morgan Odorless..... 1 doz. \$12, 33¢

Buckets, Well—

Galvanized—
Hill's..... 1 doz. 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad..... 1 doz. 14 qt. \$4.25 @ \$4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... 1 doz \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—
Wrought Brass..... 80¢
Cast Brass, Tiebout's..... 50¢
Cast Brass, Fast..... 33¢
Cast Brass, Loose Joint..... 33¢

Cast Iron—

Fast Joint, Narrow..... 50¢
Fast Joint, Broad..... 50¢
Loose Joint..... 50¢
Loose Joint, Japanned..... 75¢
Loose Joint, Jap. with Acorns..... 75¢
Parliament Butts..... 75¢
Mayer's Hinges..... 75¢
Loose Pin, Acorns, Japanned..... 75¢
Loose Pin, Acorns, Japanned, Plated Tips..... 50¢

Wrought Steel—

Fast Joint, Narrow..... 47¢
Fast Joint, Lt. Narrow..... 47¢
Fast Joint, Broad..... 75¢
Table Butts, Back Flaps, &c..... 47¢
Inside Blind, Regular..... 47¢
Inside Blind, Light..... 47¢
Loose Pin..... 50¢
Bronzed Wrought Butts..... 50¢

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt..... 5¢
Burke's One Prong, Blunt..... 5¢
Burke's Two Prong, Blunt..... 5¢
Burke's One Prong, Sharp..... 5¢

Can Openers—See Openers, Can.

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic Cartridge Co. 1000..... 1000
F. L. Waterproof, 1-10's..... 35¢
E. B. Trimmed Edge, 1-10's..... 47¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 47¢
Musket, Waterproof, 1-10's..... 50¢
G. D. 10's..... 37¢
S. B. Genuine Imported..... 45¢
Eley's E. B..... 50¢
Eley's D Waterproof, Central Fire..... \$1.60

Primers—

Berdan Primers, \$1.00..... 25¢
B. L. Caps (for Sturtevant Shells) \$1.00..... 25¢
All other Primers, \$1.20..... 25¢

Cards—

Watson's Cotton, Wool, Horse and File, list January 23, 1891..... 25¢

Carpet Stretchers—

See Stretchers, Carpet.

Carpet Sweepers—

See Sweepers, Carpet.

Cartridges—

Rim Fire Cartridges..... 50¢
Rim Fire Military..... 15¢
Cent. Fire, Pistol and Rifle..... 25¢
Cent. Fire, Military and Sporting..... 15¢
Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.
Blank Cartridges, 22 cal., \$1.75..... 25¢
Blank Cartridges, 32 cal., \$3.50..... 25¢
Primed Shells and Bullets..... 15¢
B. B. Caps, Round Ball, \$1.75..... 25¢
B. B. Caps, Con. Ball, Swgd., \$2.00..... 25¢

Casters—

Bed..... 55¢
Shallow Socket..... 60¢
Deep Socket..... 40¢
Yale Casters, low list..... 45¢
Yale, Gem..... 70¢
Martin's Patent (Phoenix)..... 45¢
Payson's Anti-friction..... 70¢
Payson's Truck..... 30¢
Giant Truck Casters..... 50¢
Stationary Truck Casters..... 50¢
Socket Truck Casters..... 50¢

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic..... 5 b pails 5 @ 5¢

Chain—

Trace, Wagon and Fancy Chains, list revised April 21, 1890..... 60¢
American Coll. in case lots, 3-16 1/4 5-18 3/8 7-16 1/2 9 1/2 11 1/2 13 1/2 15 1/2 17 1/2 19 1/2 21 1/2 23 1/2 25 1/2 27 1/2 29 1/2 31 1/2 33 1/2 35 1/2 37 1/2 39 1/2 41 1/2 43 1/2 45 1/2 47 1/2 49 1/2 51 1/2 53 1/2 55 1/2 57 1/2 59 1/2 61 1/2 63 1/2 65 1/2 67 1/2 69 1/2 71 1/2 73 1/2 75 1/2 77 1/2 79 1/2 81 1/2 83 1/2 85 1/2 87 1/2 89 1/2 91 1/2 93 1/2 95 1/2 97 1/2 99 1/2 101 1/2 103 1/2 105 1/2 107 1/2 109 1/2 111 1/2 113 1/2 115 1/2 117 1/2 119 1/2 121 1/2 123 1/2 125 1/2 127 1/2 129 1/2 131 1/2 133 1/2 135 1/2 137 1/2 139 1/2 141 1/2 143 1/2 145 1/2 147 1/2 149 1/2 151 1/2 153 1/2 155 1/2 157 1/2 159 1/2 161 1/2 163 1/2 165 1/2 167 1/2 169 1/2 171 1/2 173 1/2 175 1/2 177 1/2 179 1/2 181 1/2 183 1/2 185 1/2 187 1/2 189 1/2 191 1/2 193 1/2 195 1/2 197 1/2 199 1/2 201 1/2 203 1/2 205 1/2 207 1/2 209 1/2 211 1/2 213 1/2 215 1/2 217 1/2 219 1/2 221 1/2 223 1/2 225 1/2 227 1/2 229 1/2 231 1/2 233 1/2 235 1/2 237 1/2 239 1/2 241 1/2 243 1/2 245 1/2 247 1/2 249 1/2 251 1/2 253 1/2 255 1/2 257 1/2 259 1/2 261 1/2 263 1/2 265 1/2 267 1/2 269 1/2 271 1/2 273 1/2 275 1/2 277 1/2 279 1/2 281 1/2 283 1/2 285 1/2 287 1/2 289 1/2 291 1/2 293 1/2 295 1/2 297 1/2 299 1/2 301 1/2 303 1/2 305 1/2 307 1/2 309 1/2 311 1/2 313 1/2 315 1/2 317 1/2 319 1/2 321 1/2 323 1/2 325 1/2 327 1/2 329 1/2 331 1/2 333 1/2 335 1/2 337 1/2 339 1/2 341 1/2 343 1/2 345 1/2 347 1/2 349 1/2 351 1/2 353 1/2 355 1/2 357 1/2 359 1/2 361 1/2 363 1/2 365 1/2 367 1/2 369 1/2 371 1/2 373 1/2 375 1/2 377 1/2 379 1/2 381 1/2 383 1/2 385 1/2 387 1/2 389 1/2 391 1/2 393 1/2 395 1/2 397

Chalk Lines—See Lines.**Chisels—**

Socket Framing and Firmer	
P. S. & W.	
New Haven	
Witherby	75¢/75¢10%
Mfg.	
Ohio Tool Co.	
Douglas	75¢/75¢5%
Buck Bros.	30%
Merrill	60¢/10¢/60¢/10¢5%
L. & I. J. White	30¢/30¢5%

Tanged and Miscellaneous.	
Tanged Firmers	40¢/10¢/50%
Butcher's	\$1.75¢/5¢/10%
Spear & Jackson's	5¢ to 2¢
Buck Bros.	30%
Cold Chisels	15¢/10%

Chucks—

Beach Pat.	each, \$8.00	20%
Morse's Adjustable	each, \$7.00/20¢/20¢5%	
Danbury	each, \$6.00/30¢/30¢5%	
Syracuse Balz Pat.		25%
Graham Patent		33%
Skinner's Patent Chucks		33%
Combination Lathe Chucks		33%
Universal Lathe Chucks		40%
Independent Lathe Chucks		40%
Drill Chucks		15%
Union Mfg. Co.		
Victor	\$8.50, 25%	
Combination		40%
Universal		40%
Independent		40%

Churns—

Tiffin Union	each, 5 gal. \$3.25; 7 gal. \$3.75; 10 gal. \$4.25	
McDermid Star Barrel Churn	each 6 gal. \$2.60; 10 gal. \$2.75; 15 gal. \$3.00; 20 gal. \$3.25	

Clamps—

R. I. Tool Co.'s Wrought Iron		25%
Adjustable, Cincinnati		15¢/10%
Adjustable, Hammers		15%
Adjustable, Stearn's		30¢/30¢10%
Stearn's Adjustable Cabinet and Corner		30¢/30¢10%
Cabinet, Sargent's		60¢/60¢10%
Carriage Makers', Sargent's		70¢/10%
Carriage Makers', P. S. & W. Co.		40¢/10%
Eberhard Mfg. Co.		40¢/50¢/40¢10%
Warner's		40¢/10¢/40¢10%
Saw Clamps, see Vices, Saw Filers'		
Carpenter's, Cincinnati		25¢/10%

Cleavers, Butchers'—

Bradley's		25¢/30%
L. & I. J. White		25¢/30%
Beatty's		40¢/40¢5%
New Haven Edge Tool Co.		30¢/30¢10%
P. S. & W.		33¢/33¢/33¢10%
Foster Bros.		30%
Schulte, Lohoff & Co.		40¢/40¢5%

Clips—

Norway Axle, 1/4 & 5-16		55¢/55¢5%
2d grade Norway Axle, 1/4 & 5-16		65¢/55%
Superior Axle Clips		60¢/55¢/70%
Norway Spring Bar Clips, 5-16		60¢/55¢5%
Wrought Iron Felloe Clips		5¢/5¢/5%
Steel Felloe Clips		5¢/5¢/5%
Baker Axle Clips		25%

Cloth and Netting, Wire

—See Wire, etc.

Cockeyes**Cocks, Brass—**

Hardware list		50¢/2%
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Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company		50¢/10¢/60%
Medford Fancy Goods Co.		40¢/10¢/50%
Embossed, Gift, Poole & Steven's list		30¢/10%

Leather, Pope & Steven's list		40%
Brass, Pope & Steven's list		40%

Combs, Curry—

Fitch's		50¢/10¢/50¢/10¢/10%
Rubber, per doz.		\$10.00
American Curry Comb Co.		Net prices

Compasses, Dividers, &c.

Compasses, Calipers, Dividers		70¢/70¢10%
Remis & Call Co.'s		
Dividers		60¢/5%
Compasses and Calipers		50¢/5%
Wing and Inside or Outside		50¢/5%
Double		60%
Call's Patent Inside		30%
Excelsior		50%
J. Stevens & Co.'s		25¢/10%
Starrett's		
Spring Calipers and Dividers		25¢/10%
Lock Calipers and Dividers		25%
Combination Dividers		25%

Coopers' Tools—

—See Tools, Coopers'.

Cord—

Sash—	
Common	10¢/11¢
Patent, good quality	12¢/12¢/6¢
White Cotton Braided, fair	24¢/24¢/25¢
Common Russia Sash	12¢/12¢/15¢
Patent Russia Sash	12¢/12¢/15¢
Cable Laid Italian Sash	21¢/21¢/22¢
India Cable Laid Sash	21¢/21¢/22¢
Silver Lake	
A quality, White, 50¢	25%
B quality, White, 30¢	25%
R quality, White, 10¢	25%
Sylvan Spring, Extra Braided, White	34¢
Sylvan Spring, Extra Braided, Drab	30¢
Semper Idem, Braided, White	30¢
Egyptian, India Hemp, Braided	30¢
Massachusetts, White	20¢
Samson	
Braided, White Cotton, 50¢	30¢/30¢5%
Braided, Drab Cotton, 55¢	30¢/30¢5%
Braided, Italian Hemp, 55¢	30¢/30¢5%
Braided, Linen, 80¢	30¢/30¢5%
Tate's Cotton Braided, White, 1/2 in.	28¢/10%
Cassan Mills	
Braided, Giant, White, 1/2 in.	30¢
Braided, Giant, Drab and Fancy, 1/2 in.	30¢
Braided, Crown, White, 1/2 in.	50¢
Braided, Crown, Drab and Fancy, 1/2 in.	50¢

Wire Picture—

Braided or Twisted 75¢/10%

Corkscrews—See Screws, Cork.**Corn Knives and Cutters**

—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.)		40%
Blake's Pattern, 2 doz.		\$2.00
Turner & Seymour Mfg. Co.		50%

Cradles—

Grain	50¢/5¢/2¢/50¢/10¢/2%
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Crayons—

White Crayons, 1/2 gross		10¢
D. M. Stewart Mfg. Co., Metal Workers', 1/2 gross		\$2.50
D. M. Stewart Mfg. Co., Rolling Mill, 1/2 gross		\$2.50
See also Chalk		

Crow Bars—See Bars, Crow.**Curry Combs—**

See Combs, Curry.

Curtain Pins—

See Pins, Curtain.

Cutters—**Meat—**

Dixon's, 1/2 doz.		40¢/5%
Nos. 1 2 3 4		
\$14.00 \$17.00 \$19.00 \$30.00		
Woodruff's, 1/2 doz.		40¢/5%
Nos. 100 150		
\$15.00 \$18.00		
Hale's Pattern, 1/2 doz.		70¢/70¢5%
Nos. 11 12 13		
\$27.00 \$33.00 \$45.00		
American		30%
Nos. 1 2 3 4		
\$5 \$7 \$10 \$25 \$50 \$60		
Enterprise		30%
Nos. 10 12 22 32 42		
Each \$3 \$2.50 \$4 \$6 \$15		
Great American Meat Cutter		30%
Nos. 112 116 118 120 122		
Each \$2.00 \$2.75 \$3.00 \$3.50 \$4.00		
Miles' Challenge, 1/2 doz.		45¢/45¢10%
Nos. 1 2 3		
\$22.00 \$30.00 \$40.00		
Home No. 1, 1/2 doz.		\$26.00
Draw Cut, each:		
Nos. 5 6 8		
\$50 \$75 \$90 \$225		20¢/25%
Beef Shavers (Enterprise)		20¢/10¢/30%
Little Giant (P. S. & W. Co.)		50%
Chadborn's Smoked Beef Cutter, 1/2 doz.		\$60.00

Tobacco—

Champion		20¢/10¢/30%
All Iron		1/2 doz., \$4.25
Nashua Lock Co.'s, 1/2 doz.		\$18.00, 50¢/55%
Wilson's		55%
Sargent's		1/2 doz., \$24.00, 55¢/10
Acme		1/2 doz., \$20.00, 40%

Washer—

Smith's Pat.		1/2 doz., \$12.00, 20¢/10¢/10%
Johnson's		1/2 doz., \$11.00, 33¢/45%
Penny's, 1/2 doz., Pol. #14; Jap'd, #16, 55¢		
Appleton's		1/2 doz., \$16.00, 60¢/10%
Bonney's		30¢/10%
Cincinnati		25¢/10%

Dampers, &c.—

Dampers, Buffalo		40¢/10%
Buffalo Damper Clips		40¢/10%
Crown Damper		40%
Excelsior		40¢/10%

Diggers, Post Hole, &c.—

Samson post Hole Digger, 1/2 doz.		\$36.00
Fletcher Post Hole Augers, 1/2 doz.		\$36.00, 20%
Eureka Diggers, 1/2 doz.		\$12.50¢/14.00
Leed's, 1/2 doz.		\$8.00¢/9.00
Vaughan's Post Hole Auger, 1/2 doz.		\$13.00¢/14.00

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Springs—**

—See Springs, Door.

Drawers.

Money, 1/2 doz.		\$18¢/25¢
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Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmith's		each \$1.75
Blacksmith's Self Feeding		each \$7.50, 20%
Preast, P. S. & W.		40¢/10%
Breast, Wilson's		30¢/5%
Breast, Millers Falls		each \$3.00, 25%
Breast, Bartholomew's		each \$2.50

Drills and Drill Stocks—

Ratchet, Merrill's		25¢/20¢/45%
Ratchet, Ingersoll's		25%
Ratchet, Parker's		20¢/20¢/5%
Ratchet, Whitney's		20¢/10%
Ratchet, Weston's		20¢/25%
Ratchet, Moore's Triple Action		25¢/30%
Ratchet, Curds & Curtis		30%
Whitney's Hand Drill, Plain		\$11.00
Adjustable		\$12.00
Wilson's Drill Stocks		10%
Automatic Boring Tools		\$1.75¢/1.85

Twist Drills—

Cleveland		50¢/10¢/5%
Diamond, W. & E.		50¢/10¢/5%
Graham's Pat. Groove Shank		50¢/10¢/5%
Morse		50¢/10¢/5%
New Process		50¢/10¢/5%
Standard		50¢/10¢/5%
Syracuse (Metal list)		50¢/10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglas Mfg. Co.		20¢/20¢10%
Diston's		50%
Buck Bros.		30%
Stanley R. & L. Co.'s		
No. 64, Varnished Handles		65¢/10%
No. 86		70¢/10%
Sargent & Co.'s		
No. 1, Forged Blade		60¢/10¢/10%
Nos. 20, 30 and 60		60¢/10¢/10%
P. S. & W.		70%
Knapp & Cowles		
No. 1		60¢/20¢/70%
No. 2		60¢/10¢/70¢/5%
No. 3		60¢/55¢/60¢/10%
Nos. 4 and 60, Acme and Ideal		50¢/50%
Stearns		25¢/10¢/5%
Gay & Parsons		35%
Champion		25¢/10%
Clark's Pat.		30¢/33%
Crawford's Adjustable		30%
Ellrich's Socket and Ratchet		25¢/25¢10%
Allard's Spiral, new list		25%
Kolb's Common Sense		1/2 doz., \$6.00
Syracuse Screw-Driver Bits		30¢/30¢5%
Screw Driver Bits		1/2 doz., 50¢/75¢
Screw Driver Bits, Parr's		1/2 gross, \$0.50
Fray's Hol. Hole Sets		No. 3, \$12.00, 45%
P. D. & Co.'s All Steel		50%
Cincinnati		25¢/10%
Brace Screw Drivers		25¢/10%
Buck Bros' Screw Driver Bits		27¢/55%
Goodell's Automatic		50%
Mayhew's Hand Handle		50%
Mayhew's Monarch		45¢/10%

Egg Beaters—See Beaters, Egg.**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

46 gr.	150 gr.	F.F.F.
1/2 kegs, 1/2 doz.	5¢	2 1/2¢
1/4 kegs, 1/2 doz.	5 1/4¢	2 1/4¢
1/2 kegs, 1/2 doz.	5 1/4¢	3¢
10 lb. cans, 10		
in case	6¢	6 1/4¢
10 lb. cans, less		5¢
than 10	10¢	10¢

Enameled and Tinned Ware—See Ware, Hollow.**Escutcheon Pins—**

—See Pins, Escutcheon.

Escutcheons—

Door Locks—Same dis. as Door Locks.

Brass Thread 60¢/60¢10%

Wood 25%

Expanded Metal—

List No. 5.

Lathing		10%
Fencing, Painted Sheets		20%
Netting, Painted Sheets		20%
Door Mats, Galvanized		25%
Window Guards, Faneled		15%
Tree Guards, Faneled		15%

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, 1/2 doz.		\$1.00
Van Sand's Screw Pat. #15 1/2 gr.		60¢/10%
Van Sand's Old Pat. #15 1/2 gr.		55¢/10%
Austin & Eddy No. 2008		1/2 gr., \$9.00
Security Gravity		1/2 gr., \$9.00
Zimmerman's		45%

Faucets—

10-12 cans, 10	6 1/4¢	5¢
in case..... 6	6 1/4¢	5¢
10-12 cans, less		
than 10.....10	10¢	¢

Halters—

Covert's, Rope, Jute.....	60&10&10&25
Covert's Rope, 7-16-in., Jute.....	70&25
Covert's Rope, 1/2-in. Hemp.....	50&25
Covert's Adj. Rope Halters.....	40&25
Covert's Hemp Horse and Cattle Tie.....	50&25
Covert's Jute Horse Ties.....	70&25
Covert's Jute Cattle Ties.....	70&10&25
Covert's Adj. Web Halters.....	35&5&25
E. Covert Mfg. Co.'s Halters.....	35&5&25
E. Covert Mfg. Co.'s Horse and Cattle Ties.....	33&5&25

Hammers—**Handled Hammers—**

Maydole's, list Dec. 1, '85.....	25&10&35
Buffalo Hammer Co.....	50&50&10
Humason & Beckley.....	50&50&10
Atha Tool Co.....	50&50&10
Verree.....	40&10&—
C. Hammond & Son.....	40&10&—
Fayette R. Plumb.....	40&10&—
Artisans' Choice, A. E. Nail.....	40&10&—
Regular Y. & P. A. E. Nail.....	50
Horseshoe Turning Hammers.....	50
Other Hammers.....	40&10&—
Cheney's Claw.....	40&10&—
Cheney's Machinist's & Riveting.....	50&5&—
Hartford, Nail Hammers.....	40&5&—
Hartford, Macinists, &c.....	50&5&10&—
Magnetic Tack, Nos. 1, 2, 3, 1 1/2, 1 3/4, 1 5/8, 1 7/8.....	30&10&—
Nelson Tool Works.....	40&10&—
Warner & Nobles, new list.....	25&10
Peck, Stow & Wilcox.....	40
Sargent's.....	33&5&10

Heavy Hammers and Sledges—

3 lb and under.....	40
3 to 5 lb.....	70
Over 5 lb.....	80
Wilkinson's Smiths.....	10&5&11

Handcuffs and Leg Irons

—See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins' No. 1 Loop, per pr., 28¢; No. 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.....	15
Champion.....	15

Iron, Wrought or Cast—

Door or Thumb.....	0
Nos. 0, 1, 2, 3, 4.....	1.00 1.10 1.20 1.35 1.50
Per doz.....	60&10&10
Roggin's Latches.....	30&40&55
Bronze Iron Drop Latch.....	70
Jap'd Store Door Handles—Nuts, \$1.02; Plate, \$1.10; no plate, \$0.88.....	net
Barn Door, per doz \$1.40.....	10&10
Chest and Lifting.....	70

Wood—

Saw and Plane.....	40&10&40&10&5
Hammer, Hatchet, Axe, &c.....	40&40&5
Brad A.W.I.....	40
Hickory Firmer Chisel, ass'd.....	gr 4.50
Hickory Firmer Chisel, large.....	gr 5.00
Apple Firmer Chisel, ass'd.....	gr 5.00
Apple Firmer Chisel, large.....	gr 6.00
Socket Firmer Chisel, ass'd.....	gr 3.00
Socket Framing Chisel, ass'd.....	gr 5.00
J. B. Smith & Co.'s Pat. File.....	50
File, assorted.....	gr 2.75
Auger, assorted.....	gr 5.00
Auger, large.....	gr 7.00
Pat. Auger, Ives'.....	30&10
Pat. Auger, Douglass.....	set \$1.25
Pat. Auger, Swan's.....	set \$1.10
Hoe, Rake, Shovel, &c.....	50&10

Hangers—

Barn Door, old pattern.....	60&10&10&70
Barn Door, New England.....	60&10&10&70
Samson Steel Anti-Friction.....	55
Orleans Steel.....	55
Hamilton Wrought Steel Track.....	55
U. S. Wood Track.....	55
Champion.....	60&10
Rider and Wooster, Medina Mfg. Co.'s list.....	70
Climax Anti-Friction.....	55
Climax Anti-Friction for Wood Track.....	55
Zenith for Wood Track.....	55
Reed's Steel Arm.....	55
Challenge, Barn Door.....	50
Sterling.....	50&50&10
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50&25
Cheritree.....	50&10
Kidder's.....	40&10&50
Boss.....	60
Best Anti-Friction.....	60&10
Duplex (Wood Track).....	60&10&5
Terry's Pat., per doz pr. 4 in., \$10.00; 5 in., \$12.00.....	50&10
Terry's Steel Anti-Friction Leader.....	50&10
Terry's Steel Anti-Friction Ideal.....	50&10
Cronk's Patent, Steel Covered.....	50&5
Wood Track Iron Clad, ft. 10 ft.....	50
Carrier Steel Anti-Friction.....	50&10
Architect, per set \$6.00.....	20
Eclipse.....	20
Felix, per set \$4.50.....	20
Richards.....	30&30&10
Lane's New Standard.....	50&50&5
Lane's Standard.....	50&50&5
Lane's Parlor.....	40
Ball Bearing Door Hanger.....	20&10&25&10
Warner's Pat.....	20&10&25&10
Stearns' Anti-Friction.....	20&10&25&10
Stearns' Challenge.....	25&10&25&10&10
Faultless.....	40&40&5
American, per set \$6.00.....	20&10
Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....	40
Paragon, Nos. 1, 2 and 3.....	25&10
Cincinnati.....	25&10
Paragon, Nos. 5, 6, 7 and 8.....	20&10
Prescent.....	60&60&10
Nickel, Cast Iron.....	50
Nickel, Malleable Iron and Steel.....	40
Scranton Anti-Friction Single Strap.....	35
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45
Star.....	40&10&40&10&5
May.....	50&50&50&10
Barry, \$6.00.....	40&10
Interstate.....	40
Magie.....	45
Pendulum, Payson's.....	40
Moody.....	45

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	40 & 10
Blood's.....	50&5
Hunt's.....	50&5
Hurd's.....	50&5
Mann's.....	50&5
Peck's.....	50&5
Underhill's.....	50&5
Buffalo Hammer Co.....	50&5
Fayette R. Plumb.....	50&5
C. Hammond & Son.....	50&5
Kelly's.....	50&5
Sargent's & Co.....	50&5
P. S. & W. Co.....	50&5
Ten Eyck Edge Tool Co.....	50&5
Collins.....	50&5
Schulte, Lohoff & Co.....	50&5

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Parker.....	75&25
Huffer.....	50
Clark's, Nos. 1, 3, 5, 40 and 50.....	75&10&50
Clark's Mortise Gravity.....	50
Sargent's, Nos. 1, 3, 5, 11, 13.....	55&10&55&10&5
Sargent's, No. 12.....	77&10&5
Reading's Gravity.....	75&10&75&10&5
Shepard's.....	75&10
Niagara.....	80
Buffalo.....	80
Clark's Genuine Pattern.....	80
O. S., Lull & Porter.....	75&10
Acme, Lull & Porter.....	75
Queen City Reversible.....	70&10&50&75
Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75&10&25
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10

Gate Hinges—

Western.....	per doz \$4.40, 60
N. E. Reversible.....	per doz \$7.00, 55
N. E. Reversible.....	per doz \$5.20, 55&10
Clark's, Nos. 1, 2, 3.....	60&10&5
N. Y. State.....	per doz \$5.00, 55&10
Automatic.....	per doz \$12.50, 50
Shepard's.....	60&10&5

Spring Hinges—

Geer's Spring and Blank Butts.....	40
Union Spring Hinge Co.'s list, March, 1888.....	20
Barker's Double Acting.....	25
Union Mfg. Co.....	25
Bommer's.....	30
Buckman's.....	15&20
Chicago.....	40
Bardsley's Patent.....	40
Acme.....	30
U. S.....	25&10
Empire and Crown.....	20
Hero and Monarch.....	55
American, Gem and Star.....	20
Wiles.....	20
Devore's.....	40
Rex.....	40
Royal.....	60
Reliable.....	60
Champion.....	60
Stearns.....	60
Samson, per gross.....	\$14.00

Wrought Iron Hinges—

List February 14, 1891.....	50&10&5
Strap and T.....	50&50&10
Corrugated Strap and T.....	50&50&10
Screw Hook and (6 to 12 in., 1/2 in., 3/4 in., 1 in., 1 1/2 in., 2 in., 2 1/2 in., 3 in., 3 1/2 in., 4 in., 4 1/2 in., 5 in., 5 1/2 in., 6 in., 6 1/2 in., 7 in., 7 1/2 in., 8 in., 8 1/2 in., 9 in., 9 1/2 in., 10 in., 10 1/2 in., 11 in., 11 1/2 in., 12 in., 12 1/2 in., 13 in., 13 1/2 in., 14 in., 14 1/2 in., 15 in., 15 1/2 in., 16 in., 16 1/2 in., 17 in., 17 1/2 in., 18 in., 18 1/2 in., 19 in., 19 1/2 in., 20 in., 20 1/2 in., 21 in., 21 1/2 in., 22 in., 22 1/2 in., 23 in., 23 1/2 in., 24 in., 24 1/2 in., 25 in., 25 1/2 in., 26 in., 26 1/2 in., 27 in., 27 1/2 in., 28 in., 28 1/2 in., 29 in., 29 1/2 in., 30 in., 30 1/2 in., 31 in., 31 1/2 in., 32 in., 32 1/2 in., 33 in., 33 1/2 in., 34 in., 34 1/2 in., 35 in., 35 1/2 in., 36 in., 36 1/2 in., 37 in., 37 1/2 in., 38 in., 38 1/2 in., 39 in., 39 1/2 in., 40 in., 40 1/2 in., 41 in., 41 1/2 in., 42 in., 42 1/2 in., 43 in., 43 1/2 in., 44 in., 44 1/2 in., 45 in., 45 1/2 in., 46 in., 46 1/2 in., 47 in., 47 1/2 in., 48 in., 48 1/2 in., 49 in., 49 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in., 735 1/2 in., 736 in., 736 1/2 in., 737 in., 737 1/2 in., 738 in., 738 1/2 in., 739 in., 739 1/2 in., 740 in., 740 1/2 in., 741 in., 741 1/2 in., 742 in., 742 1/2 in., 743 in., 743 1/2 in., 744 in., 744 1/2 in., 745 in., 745 1/2 in., 746 in., 746 1/2 in., 747 in., 747 1/2 in., 748 in., 748 1/2 in., 749 in., 749 1/2 in., 750 in., 750 1/2 in., 751 in., 751 1/2 in., 752 in., 752 1/2 in., 753 in., 753 1/2 in., 754 in., 754 1/2 in., 755 in., 755 1/2 in., 756 in., 756 1/2 in., 757 in., 757 1/2 in., 758 in., 758 1/2 in., 759 in., 759 1/2 in., 760 in., 760 1/2 in., 761 in., 761 1/2 in., 762 in., 762 1/2 in., 763 in., 763 1/2 in., 764 in., 764 1/2 in., 765 in., 765 1/2 in., 766 in., 766 1/2 in., 767 in., 767 1/2 in., 768 in., 768 1/2 in., 769 in., 769 1/2 in., 770 in., 770 1/2 in., 771 in., 771 1/2 in., 772 in., 772 1/2 in., 773 in., 773 1/2 in., 774 in., 774 1/2 in., 775 in., 775 1/2 in., 776 in., 776 1/2 in., 777 in., 777 1/2 in., 778 in., 778 1/2 in., 779 in., 779 1/2 in., 780 in., 780 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Brittan, Graham & Mathes, list Jan. 1890. 60&10&10
Perkins' Bungalow Proof. 30&25
Plate. 30&25
Barnes Mfg. Co. 40&40&10
Yale. net prices
Deltz Flat Key. 30
L. & C. Round Key Latches. 30&10
L. & C. Flat Key Latches. 33&10
Romer's Night Latches. 15
Brooklyn Latches. 30&10
Shepardson or U. S. 35
Seed's N. Y. Hasp Lock. 25

Padlocks—

List June 10, 1891. 50&25
Norwich Lock Mfg. Co., old list. 70&25
Yale Lock Mfg. Co.'s. net prices
Eagle. 25&25
Eureka, Eagle Lock Co. 40&25
Romer's, Nos. 0 to 91. 30
Romer's Scandinavian, &c., Nos. 100 to 505. 105
A. E. Deltz. 40
Champion Padlocks. 40
Hotchkiss. 30
Star. 25&25
Horseshoe. 40
Barnes Mfg. Co. 40&40&10
Nock's. 30
Brown's Pat. 25
Scandinavian. 60&60&10
E. T. Frahm's Keystone Scandinavian. Nos. 119, 120, 130 and 140. 60&104
Other Nos. 65
Ames Sword Co. up to No. 150. 40
Ames Sword Co. above No. 150. 50
Slaymaker, Barry & Co. No. 1010 line. 85&5
No. 41 line. 45&10
No. 61 line. 50&5
No. 21 line. 75

Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 ½ gr. 33½
Ferguson's. 33½
Victor. 60&10&25
Walker's. 105
Attwell Mfg. Co. 25&25
Reading. 60&10&60&10&10
Hammond's Window Springs. 40
Common Sense, Jap'd, Cop'd and Br'zed. ½ gr \$4.00
Common Sense, Nickel Plated. ½ gr \$10.00
Universal. 30
Kempshall's Gravity. 60
Kempshall's Model. 60&60&10
Corbin's Daisy, list Feb. 15, 1888. 70
Payson's Perfect. 60&10
Huganin's Sash Balances. 25&5&25
Huganin's New Sash Locks. 25&5&25
Stoddard's "Practical". 105
Ives' Patent. 60&10&60&10&5
Fish (Liesche's pat.), No. 100, ½ gr, \$8; No. 105, ½ gr, \$10. 40
Davis, Bronze, Barnes Mfg. Co. 50
Champion Safety, list January, 1889. 70
Security. 70
Giant, list Jan., 1892. 70&5
Wolcott's. 60&10&5
Monarch. 50

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles. ½ doz, \$1.75; ½ gross. \$17.00

Machines.

Boring—
Without Augers. Upright. Angular.
Douglas. \$3.50 \$6.75. 50
Snell's, Rice's Pat. 5.50 6.75 40&10&10
Jennings'. 5.50 6.75 45&45&10
Other Machines. 2.35 2.75
Phillips' Patent with Augur. 7.00 7.50
Miller's Falls. 7.50 25

Fluting—

Knox, 4½-inch Rolls. \$3.25 each 35
Knox, 6-inch Rolls. \$3.60 each 35
Eagle, 3½-inch Rolls. \$2.15. 35
Eagle, 5½-inch Rolls. \$2.85. 35
Crown, 4½ in., \$3.50; 6 in., \$4.00; 8 in., \$6.50 each. 35
Crown Jewel, 6 in. \$5.50 each. 35
American, 6 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each. 35
Domestic Fluter. each, \$1.50
Geneva Hand Fluter, White Metal. ½ doz \$12.25
Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00. 30
Shepard Hand Fluter, No. 85, per doz \$15.30. 40
Shepard Hand Fluter, No. 110, ½ doz \$11.00. 40
Shepard Hand Fluter, No. 95, ½ doz \$8.00. 40
Clark's Hand Fluter, ½ doz \$15.00. 35
Combined Fluter and Sad Iron. ½ doz \$15.00. 30
Buffalo, ½ doz \$10.00. 105

Hoisting—

Moore's Hand Holst, with Lock Brake. 205
Moore's Differential Pulley Block. 40
Energy's Mfg. Co.'s. 25
Sure Grip Steel Tackle Blocks. 25

Washing—

Anthony Wayne, ½ doz, No. 1, \$51; No. 2, \$45; No. 3, \$42.
Western Star, ½ doz, No. 2, \$45; No. 2 \$48.
Wells. ½ doz \$54.00
Fair and Square. ½ doz \$42.00

Mallets—

Hickory. 20&10&20&10&10
Lignumvitae. 20&10&20&10&10
B. & L. Block Co., Hickory & L. V. 30&30&105

Mattocks—Regular list.

60&10&60&10&5

Measures—

Standard Fiberware, No. 1, peck ½ dozen, \$4; ½ peck, \$3.50.

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz. \$2.00

Mills—

Coffee—

Box and Side, list Jan. 1, 1888, 60&60&105
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co. 20&10&305
The Swift, Lane Bros. 20&105

Mining Knives—

See Knives, Mining.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Philadelphia. 60&105
Pennsylvania and Continental. 605
New Model and Excelsior. 60&60&105
Other Machines. 60&10&10&75

Muzzles—

Safety. ½ doz, \$3.00, 255

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, Apr. 11, '92. 80&10&105
Pack Mfrs. list. 70&70&105
Wire Nails, Standard Penny.
Card June 1, '89 base. \$1.85&\$1.90

Horse—

Nos. 6 7 8 9 10
American. 8½ 8½ 8½ 8½ 8½ net
Ausable. 28¢ 20¢ 25¢ 24¢ 25¢
Clinton, Fin. 19¢ 17¢ 16¢ 15¢ 14¢ 30&105
Essex. 28¢ 20¢ 25¢ 24¢ 23¢
Lyra. 19¢ 17¢ 16¢ 15¢ 14¢ 40&5
Snowden. 19¢ 17¢ 16¢ 15¢ 14¢ 40&5
Vulcan. 23¢ 21¢ 20¢ 19¢ 18¢ 25
Northwest'n. 25¢ 23¢ 22¢ 21¢ 20¢ 25
A. C. 25¢ 23¢ 22¢ 21¢ 21¢ 25
C. B. K. 25¢ 23¢ 22¢ 21¢ 21¢ 25
Maud S. 25¢ 23¢ 22¢ 21¢ 21¢ 40&10&5
Champlain. 28¢ 26¢ 25¢ 24¢ 23¢ 40&5&5&25
Saranac. 23¢ 21¢ 20¢ 19¢ 18¢ 40&5
Champion. 25¢ 23¢ 22¢ 21¢ 20¢ 10&10&105
Capewell. 19¢ 18¢ 17¢ 16¢ 16¢ 105
Anchor. 23¢ 21¢ 20¢ 19¢ 18¢ 50
Western. 23¢ 21¢ 20¢ 19¢ 18¢ 50
Empire Bronzed. 14 ½ 10

Picture—

Brass Head, Sargent's list. 50&10&105
Brass Head, Combination list. 50&105
Porcelain Head, Sargent's list. 50&10&105
Porcelain Head, Combination list. 40&105
Siles' Patent. 405

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square. Hex.
Hot Pressed. 5.35¢ 5.95¢ off list
Cold Punched. 5.00¢ 5.10¢ off list
In packages of 100 2, add 1-10¢ ½
net; in packages less than 100 ½, add 1¢ ½ net.

Okum—

Best or Government. ½ lb 6¢ ¼ lb 4¢
U. S. Navy. ½ lb 5¢ ¼ lb 3¢
Navy. ½ lb 5¢ ¼ lb 3¢

Oilers—

Zinc and Tin. 65&10&70&5
Brass and Copper. 50&10&50&10&5
Malleable, Hammers' Improved, No. 1, \$5.00; No. 2, \$4.00; No. 3, \$4.40. 10&10&5
Malleable, Hammers' Old Pattern, same list. 405
Prior's Pat. or "Paragon" Zinc. 60&10&105

Prior's Pat. or "Paragon" Brass. 505
Olmstead's Tin and Zinc. 605
Olmstead's Brass and Copper. 505
Broughton's Zinc. 605
Broughton's Brass. 505
Gem, P. D. & Co. ½ gro. \$2
Steel, Draper & Williams. 505

Openers, Can—

Messenger's Comet. ½ doz \$3.00, 255
American. ½ gross \$2.75, \$3.00
Duplex. ½ doz \$3.75, 205
Lyman's. ½ doz \$2.25, 55&605
No. 4, French. ½ doz \$2.25, 55&605
No. 5, Iron Handle. ½ gr \$6.00, 45&505
Eureka. ½ doz \$2.50, 105
Sardine Sissors. ½ doz \$2.75, 3.00
Star. ½ doz \$2.75
Sprague, No. 1, \$2.50; 2, \$2.25; 3, \$2.50; 50&10&105
Excelsior, No. 1 \$2.50; No. 2, \$1.50. 405
World's Best. ½ gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00. 50&105
Universal. ½ doz \$3.00. 55&55
Domestic. ½ doz \$2.00. 455
Champion. ½ doz \$2.00. 505

Packing, Steam—

Rubber—

Standard. 70&70&105
Extra. 60&60&55
N. Y. B. & P. Co. Standard. 605
N. Y. B. & P. Co. Empire. 605
N. Y. B. & P. Co. Salamander. 255
Jenkins' Standard. ½ lb 80¢. 25&25&55

Miscellaneous—

American Packing. 10¢ 11¢ ½ lb
Russia Packing. 14¢ ½ lb
Italian Packing. 15¢ ½ lb
Cotton Packing. 15¢ ½ lb
Jute. 7¢ 8¢ ½ lb

Pails—

Galvanized—

Quarts 10 12 14
Hill's Light Weight, ½ doz. \$2.75 3.00 3.25
Hill's Heavy Weight, ½ doz. 3.00 3.25 3.75
Helwig's. 2.50 2.75 3.00
Sidney Shepard & Co. 2.35 2.85 3.05
Iron Clad. 2.50 2.75 3.00
Fire Buckets. 2.75 3.25 3.50
Buckets—See Well Buckets.

Indurated Fiber Ware—25¢

Star Pails, 12 qt. ½ doz \$5.40
Stable and Milk, 14 bt. ½ doz \$6.00
Fire Pails, deep. ½ doz \$5.40
Fire Pails, round bottom. ½ doz \$7.80

Standard Fiber Ware—

Water Pails, 12 qt., ½ doz. \$4.00
Dairy Pails, 14 qt., ½ doz. 4.50
Fire Pails, No. 1, 12 qt., ½ doz 4.50
Fire Pails, No. 2, 14 qt., ½ doz 5.00
Sugar Pails. 6.00 6.50
Horse Pails. 5.00
Burgess Pails. 4.00
Slop Jars (bal. trap). 8.00 9.00
Chamber Pails, 14 qt. 6.50 7.50

Pans—

Dripping—

Small sizes. ½ lb 6½¢
Large sizes. ½ lb 5½¢
Silver & Co. (Covered). 405

Fry—

Standard List:
No. 1. 0 1 2 3 4
½ doz. \$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No. 2. 5 6 7 8 9
½ doz. \$6.00 \$7.00 \$8.00 \$9.00
Polished, regular goods. 75¢ 75¢ 105
Acme Fry Pans. 60&105

Dust—

Steel Edge, No. 1. ½ doz \$1.75

Paper and Cloth—

Sand and Emery—

List April 19, 1886. 50&10&50&10&5
Sibley's Emery and Crocus Cloth. 305

Parers—

Apple—

Advance. ½ doz \$4.75
Baldwin. ½ doz 5.25
Bonanza. each 5.00
Daisy. ½ doz 4.00
Dandy. each 7.50
Eclipse. ½ doz 4.25
Rocking Table. each 16.00
Family Bay State. ½ doz 12.00
Favorite. ½ doz 5.00
Gold Medal. ½ doz 4.00
Ideal. ½ doz 4.00
Improved Bay State. ½ doz 27.00 30.00
Little Star. ½ doz 4.50
Monarch. ½ doz 13.50
New Lightning. ½ doz 5.50
Oriole. ½ doz 4.00
Penn. ½ doz 4.00
Perfection. ½ doz 4.00
Pomona. ½ doz 4.00
Rocking Table. ½ doz 6.00
Turn Table. ½ doz 4.50
Victor. ½ doz 13.50
Waverly. ½ doz 4.00
White Mountain. ½ doz 4.00
72. ½ doz 4.25
78. ½ doz 7.00

Potato—

White Mountain. ½ doz \$4.50
Antrim Combination. ½ doz \$5.50
Hoosier. ½ doz \$13.50
Saratoga. ½ doz \$5.50

Pencils—

Faber's Carpenters'. high list 505
Faber's Round Gilt. ½ gro \$5.25
Dixon's Lead. ½ gro \$4.50
Dixon's Lumber. ½ gro \$6.75
Dixon's Carpenters'. 105

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00. 60&10&60&10&5

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Bow—

Humason, Beckley & Co.'s. 60&105
Sargent & Co.'s. \$17 and \$18. 60&105
Peck, Stow & W. Co. 50&10&50&10&5

Curtain—

Silvered Glass. net
White Enamel. net

Escutcheon—

Iron, list Nov. 11, 1885. 50&10&50&10&5
Brass. 60&60&55

Pipe, Wrought Iron—

List July 21, 1892.
1½ and under, Plain. 60&5&60&105
1½ and under, Galvanized. 50&5&50&105
1½ and over, Plain. 70&5&70&105
1½ and over, Galvanized. 60&5&60&105
Boller Tubes.
Sizes up to 24 in., inclusive. 57½¢ 605
Sizes 3 in. and larger. 60&655
Casing. 555
Inserted Joints Casing. 505
Steel Boiler Tubes. 305

Planes and Plane Irons—

Wood Planes—

Molding. 40&10&40&10&105
Bench, First quality. 50&10&50&10&105
Bench, Second quality. 55&10&55&10&105
Bailey's (Stanley R. & L. Co.). 50&105

Iron Planes—

Bailey's (Stanley R. & L. Co.). 50&105
Miscellaneous Planes (Stanley R. & L. Co.). 25&105
Steel's Iron Planes. 35&35&105
Meriden Mal. Iron Co.'s. 40&40&105
Davis' Iron Planes. 40&40&105
Birmingham Plane Co. 50&50&105
Gage Tool Co.'s Self-Setting. 20&10&105
Chaplin's Iron Planes. 40&40&105
Sargent's. 30&10&30&10&105
Standard Tool Co. 50&50&55

Plane Irons—

Butcher's. \$5.00 \$5.25 to 2
Buck Bros. 305
Auburn Thistle. 30&105
Ohio. 305
Sandusky. 305
L. & J. White. 25
Stanley R. & L. Co. 50&105

Plates—

Felloe. ½ lb 6¢ 6½¢

Pliers and Nippers—

Button's Patent. 50&50&105
Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00 ½ doz. 405
Humason & Beckley Mfg. Co. 50&50&105
Lindsay's Giant. 33½5
Gas Pliers. Custar's Nickel Plated. 60&55
Eureka Pliers and Nippers. 405
Stanley's Parallel. 255
P. S. & W. Cast Steel. 505
P. S. & W. Tinner's Cutting Nippers. add 65. 105
Carew's Pat. Wire Cutters. 205
Morrill's Parallel. ½ doz, \$12.00. 30&55
Cronk's 8 in., \$15.00; 10 in., \$21.00. 50&50&55
Cronk's Button Pattern. 50&10&605
Cronk's Carrier Pliers. 60&60&55

Plumbs and Levels—

Regular List. 75&10&75&10&55
Stanley's Duplex. 20&105
Stanley's Handy. 30&105
Dixon's. 505
Pocket Levels. 70&10&70&10&105
Davis Iron Levels. 305
Davis' Inclinoimeters. 10&105

Poachers, Egg—

Buffalo Steam Egg Poachers, ½ doz. No. 1, \$6.00; No. 2, \$9.00. 255
Silver & Co. G-Ring. ½ doz, \$4.00; 3-Ring. \$2.00

Pokes, Animal—

Bishop's I. X. L. ½ doz \$6.00
Bishop's O. K. ½ doz \$5.25
Bishop's Pioneer. ½ doz \$3.75
Bishop's American. ½ doz \$2.75
Eagle, Double Stale. ½ doz \$5.75
Eagle, Single Stale. ½ doz \$3.75
Buckeye, Single Stale. ½ doz \$2.75
Bolding. ½ doz \$6.00

Police Goods—

R. I. Tool Co., Handcuffs, \$15.00 ½ doz 105
R. I. Tool Co., Leg Irons, \$25.00 ½ doz 105
Tower's. 255
Daley's Improved Handcuffs, 2 Hands, Polished, ½ doz, \$48.00; Nickleled, \$57.00; 3 hands Polished, ½ doz, \$72.00; Nickleled, \$84.00. 255
J. P. Lovell's Police Goods. 255

Polish—

Metal—

Prestoline. 305
Prestoline Paste. 33½5
Gaston's Silver Compound. 33½5

Stove—

Joseph Dixon's. ½ gro, \$6.00, 105
Gem. ½ gro, \$4.50, 105
Gold Medal. ½ gro, \$6.00, 255
Lustro. ½ gro, \$4.75
Ruby. ½ gro, \$3.75
Rising Sun, 5 gro lots. ½ gro \$5.50
Dixon's Plumbago. ½ gro \$8
Boynton's Neon Day. ½ gro \$13.00
Parlor Pride Stove Enamel, ½ gro
Yates' Liquid, 2 3 5 10 gal
½ gal. \$0.80 .70 .50 .50
Yates Standard Paste Polish, 10 5 cans, ½ lb 12½¢
Jet Black. ½ gro \$3.50
Japanese. ½ gro \$5.50
Firesteel. ½ gro \$2.50
Diamond O. K. Enamel. ½ gro \$12.00
Bonnell's Liquid Stove Polish, ½ gro \$9.00
Bonnell's Paste Stove Polish, ½ gro \$6.00
Black Eagle Benzine Paste, 5 and 10 5 cans. 12½¢
Black Jack Water Paste, 5 and 10 5 cans. 12½¢
Nickel Plate Paste. ½ gro \$6.00
Crown Paste. ½ gro \$7.20
Crown Paste in 5 and 10 5 pails, ½ lb 12¢
Black Flag. ½ gro \$7.20
Black Flag, 5 and 10 5 pails, ½ lb 12¢
Black Flag, liquid, in bottles, ½ gro \$5.00
Diamond Rock Nickel Cleaner. ½ gro \$10.20

Raven Paste:

5-lb. pails, (per case of 6 or 12), ½ lb 12¢
Less than case. ½ lb 15¢
Liquid, 6 oz. bottles. ½ gross, \$5.00
Liquid, 8 oz. bottles. ½ gross, \$6.00
Water Polish. ½

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co. 20x10x30x
Hens. 1/2 doz \$3.50
Shepard's Queen City. 40x
Silver & Co. 1/2 doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers, Nail—**

Scranton. 1/2 doz, \$18.00, 33x
Curtis Hammer. 1/2 doz, \$9.00
Giant, No. 1. 1/2 doz, \$18.00, 10x
Giant, No. 2. 1/2 doz, \$15.00, 10x
Pelican. 1/2 doz, \$9.00, 25x
Eclipse. Each, \$2.00, net
Economy. 1/2 doz, \$6.00

Pulleys—

Hot House, Awning, &c. 60x10x
Japanned Screw. 60x10x
Brass Screw. 60x10x
Japanned Side. 60x10x
Japanned Clothes Line. 60x10x
Empire Sash Pulley. 55x60x
Moore's Sash, Anti-Friction. 50x
Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50
Hay Fork, "Anti-Friction," 5 in. solid, \$5.70
Hay Fork, "F" Common and Patent Bushed. 20x
Hay Fork, Tarbox Pat. Iron. 20x
Hay Fork, Reed's Self-Lubricating. 60x
Shade Rack. 45x
Tackle Block—See Blocks
Moore's Anti-Friction 5 in. Wheel, 1/2 doz., \$12.00. 40x

Pumps—

Clatern, Best Makers. 60x60x10x
Pitcher Spout, Cheaper G'ds. 75x75x10x

Punches—

Saddler's or Drive, good. 1/2 doz., 60x65x
Bemis & Call Co.'s Cast Steel Drive. 54x55x
Bemis & Call Co.'s Springfield Socket. 50x55x
Spring, good quality. 1/2 doz., \$2.50x
Spring, Leach's Pat. 15x
Bemis & Call Co.'s Spring and Check. 40x
Solid Tinner's, P. S. & W. Co., 1/2 doz., \$1.44
Tinner's Hollow Punches, P. S. & W. Co. 20x25x
Rice Hand Punches. 15x
Avery's Revolving. 40x
Avery's Sawset and Punch—See Sawsets.

Rail—

Sliding Door, Wrt Brass. 1/2 doz., 35x, 15x
Sliding Door, Bronzed Wrt Iron. 1/2 doz., 7x
Sliding Door, Iron, Painted. 1/2 doz., 3x, 40x
Barn Door, Light. In. 3/4 3/4 3/4
Per 100 feet. \$2.00 2.50 3.10, 10x
B. D. for N. E. Hand. Small, Med. Large.
Per 100 feet. \$3.15 2.70 3.25 Net
Terry's Steel Rail. 1/2 doz., 4x
Victor Track Rail, 7x 1/2 foot. 50x25x
Carrier, double braced, Steel Rail, 1/2 foot. 40x
Moore's Wrought Iron. 25x
Moody Steel Rail. 45x

Rakes—

Cast Steel, Association goods. 60x70x
Cast Steel, outside g'ds. 60x10x70x5x
Malleable. 70x70x5x
Gibbs Lawn Rake. 1/2 doz., \$4.30
Canton Lawn Rake. 1/2 doz., \$3.75
Favorite Lawn Rake. 1/2 doz., \$4.40
Fort Madison Prize Bow Brace and Peerless. 65x
Fort Madison Steel Tooth Lawn Rake. 60x00. 25x

Razors—

J. R. Torrey Razor Co. 20x
Wostenholm and Butcher, \$10 to \$20. 10x
Jordan's AAA1, new list. Net
Jordan's Old Faithful, new list. Net
Galvanic. 1/2 doz., \$15.00
Electric Cutlery Co. Net

Razor Stropps—

See Stropps, Razor.

Rings and Ringers—**Bull Rings—**

Union Nut Co. 55x
Sargent's. 60x10x70x5x
Hotchkiss' low list. 30x
Humason, Beckley & Co.'s. 70x10x
Peck, Stow & W. Co.'s. 50x10x50x10x10x
Ellrich Hdw. Co., White Metal, low list. 50x50x10x

Hog—

Top of the Hill Ringers. 1/2 doz \$2.00
Top of the Hill Rings. 1/2 doz \$1.25
Hill's Improved Ringers. 1/2 doz \$1.25
Hill's Old Style Ringers. 1/2 doz \$1.12x
Hill's Tongue. 1/2 doz \$3.00
Hill's Rings. 1/2 doz \$3.00
Perfect Rings. 1/2 doz \$2.25
Blair's Hog Ringers. 1/2 doz \$2.00
Blair's Hog Rings. 1/2 doz \$2.00
Champion Ringers. 1/2 doz \$2.00
Champion Rings, Double. 1/2 doz \$2.25
Brown's Ringers. 1/2 doz \$1.15x
Brown's Rings. 1/2 doz \$1.15x
Electric Hog Rings. 1/2 doz boxes \$1.50
Electric Hog Ringers. 1/2 doz \$2.00
Major Rings. 1/2 doz \$1.25
Major Ringers. 1/2 doz \$2.00

Rivets and Burrs—

Iron, list Nov. 17, '87. 40x
Copper. 60x10x
Coppered Iron, Bettina Brand. 40x

Rivet Sets—See Sets.**Rods—**

Stair, Brass. 25x2x
Stair, Black Walnut. 1/2 doz 40x

Rollers—

Barn Door, Sargent's list. 60x10x10x
Acme Moore's Anti-Friction. 55x
Union Barn Door Roller. 70x
Thompson Mfg. Co.'s Lawn Rollers. 30x

Rope—

Manilla, 7-16 in. diam. and larger 1/2 doz 12x
Manilla. 1/2 doz 12x
Manilla, 1/4 and 5-16 in. 1/2 doz 13x
Manilla, Tarred Rope. 1/2 doz 11x
Sisal. 1/2 doz 12x
Sisal. 1/2 doz 10x
Sisal. 1/2 doz 11x
Sisal, Hay Rope. 1/2 doz 10x
Sisal, Tarred Rope. 1/2 doz 9x
Sisal, Medium Lath Yarn. 1/2 doz 8x
New Zealand. 1/2 doz 9x
New Zealand. 1/2 doz 9x
New Zealand. 1/2 doz 9x
New Zealand, Tarred Rope. 1/2 doz 8x
New Zealand, Tarred Rope. 1/2 doz 8x
Note—Manufacturers' prices on above
1/2 doz less, f.o.b. factory—less 15% for cash.
Cotton Rope. 1/2 doz 13x
Jute Rope. 1/2 doz 6x

Wire—

List February, 1892.
All kinds. 45x

Rules—

Boxwood. 80x10x10x
Ivory. 50x50x10x
Starrett's Rules and Straight Edges. 25x10x
Steel. 25x10x

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers, Sausage.

Saws—The following prices are

often cut by jobbers.

Disston's Circular. 45x45x5x
Disston's Cross Cut. 45x45x5x
Disston's Hand. 25x
Woodrough & McFarlin. 30x30x5x
Hand, Panel and Rip. 18x20x
Narrow Champion Cross Cuts with Handles, 1/2 foot. 18x20x
Champion Thin Back Cross Cuts, 1/2 foot. 20x28x
Champion Extra Thin Back Cross Cuts, 1/2 foot. 20x31x
One Man Champion Cross Cuts, 1/2 foot. 37x40x
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip. 35x35x5x
Narrow Champion Cross Cuts with Handles, 1/2 foot. 18x20x
Champion Thin Back Cross Cuts, 1/2 foot. 20x28x
Champion Extra Thin Back Cross Cuts, 1/2 foot. 20x31x
One Man Champion Cross Cuts, 1/2 foot. 37x39x
Atkins' Circular Shingle & Heading. 50x
Atkins' Silver Steel Diamond X Cuts. 1/2 foot 70x
Atkins' Special Steel Dexter X Cuts. 1/2 foot 50x
Atkins' Special Steel Diamond X Cuts. 1/2 foot 32x
Atkins' Champion and Electric Tooth X Cuts. 1/2 foot 30x
Atkins' Hollow Back X Cuts. 1/2 foot 30x
Atkins' Mulay, Mill and Drag. 40x
Atkins' One-Man Saw, with handles. 1/2 foot 40x
Pence Circular and Mill. 45x45x5x
Pence Hand Panel and Rip. 45x45x5x
Peace Cross Cuts. 45x45x5x
Richardson's Circular and Mill. 45x45x5x
Richardson's X Cuts. 45x45x5x
Richardson's Hand, &c. 25x25x5x
C. E. Jennings & Co. Hand, Panel and Rip. 25x25x10x

Hack Saws—

Griffin's, complete. 40x10x50x
Griffin's Hack Saw Blades. 40x10x50x
Star Hack Saws and Blades. 25x
Eureka and Crescent. 25x

Scroll—

Lester, complete, \$10.00. 25x
Rogers, complete, \$4.00. 25x
Barnes' Builders' and Cab. Makers' \$15.25. 35x
Barnes' Scroll Saw Blades. 35x

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality. 40x
Hatch, Tea, No. 161. 1/2 doz \$21.00
Union Platform, Plain. 1/2 doz \$6.75x
Union Platform, Striped. 1/2 doz \$2.10x
Union Platform, Striped. 1/2 doz \$2.50x
Chattillon's Grocers' Trip Scales. 50x
Chattillon's Eureka. 25x
Chattillon's Favorite. 40x
Family Turnbills. 30x30x10x
Richie Bros' Platform. 40x

Scale Beams—

See Beams, Scale.

Scissors, Fluting. 45x**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) \$6.50. 30x10x
Box, 1 Handle. 1/2 doz \$4.00. 10x
Box, 2 Handle. 1/2 doz \$6.00. 10x
Defiance Box and Ship. 20x10x
Foot. 50x10x60x
Ship, Common. 1/2 doz \$3.50 net
Ship, R. L. Tool Co. 10x

Screen Window and Door Frames—See Frames.**Screw Drivers—**

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron. 55x10x55x10x10x
Bench, Wood, Beech. 1/2 doz \$2.25
Bench, Wood, Hickory. 20x10x
Hand, Wood. 25x10x25x10x5x
Hand, Grand Rapids, list. 35x
Lag, Blunt Point, list Jan. 1, 1890. 75x10x
Coach and Lag, Gimlet Point, list Jan. 1, 1890. 75x10x
Red. 25x5x
Hand Rail, Sargent's. 60x10x
Hand Rail, H. & P. Mfg. Co. 70x10x75x
Hand Rail, Am. Screw Co. 75x
Jack Screws, Millers Falls list. 50x50x5x
Jack Screws, P. S. & W. 35x
Jack Screws, Sargent. 60x10x60x10x5x
Jack Screws, Stearns. 40x40x10x

Cork—

Humason & Beckley Mfg. Co. 40x10x50x
Williamson's. 33x33x33x5x
Howe Bros. & Hulbert. 35x

Machine—

Flat Head Iron. 55x
Round Head Iron. 55x

Wood—

List January 1, 1891.
Flat Head Iron. 70x
Round Head Iron. 65x
Flat Head Brass. 70x
Round Head Brass. 65x
Flat Head Bronze. 70x
Round Head, Bronze. 65x
Rogers' Drive Screws. 82x

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain. 40x50x40x10x
Grass. 40x10x50x

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Alken's Sets, Awls and Tools. 55x10x
No. 20, 1/2 doz \$10.00. 55x10x
Fray's Adj. Tool Hdl., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9.
Millers Falls Adj. Tool Hdl. 45x
No. 1, \$12; 2, \$18.
Henry's Combination Haft. 1/2 doz \$6.50
Stanley's Excelsior. 25x
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.
Common Brad Sets. 30x10x
No. 42, \$10.50; No. 43, \$12.50. 70x10x5x

Nail—

Square. 1/2 gr. \$4.00x
Round. 1/2 gr. \$3.25
Buck Bros. 27x
Cannon's Diamond Point. 1/2 gr. \$12.20x

Rivet—

Regular list. 50x10x

Saw—

Stillman's Genuine. 1/2 doz \$5.00x
Stillman's Pattern, Hand, 1/2 doz \$3.25.
Cross Cut, \$5.25. 45x50x
Common Lever. 1/2 doz \$2.00, 45x50x
Morrill's No. 1, \$12.00. 40x40x5x
No. 11, \$15.00. 40x10x40x20x
Nos. 3 and 4, \$18.00. 40x5x
No. 5, \$24.00. 40x5x
Leach's, No. 0, \$8.00; No. 1, \$15. 15x20x
Hammer, Hotchkiss. 20x10x20x10x10x
Hammer, Bemis & Call Co.'s new Pat. 30x5x
Bemis & Call Co.'s Lever and Spring Hammer. 30x5x
Bemis & Call Co.'s Plate. 10x
Bemis & Call Co.'s Cross Cut. 12x
Alken's Genuine. \$13.00, 50x10x50x
Alken's Imitation. \$7.00, 55x5x
Hart's Pat. Lever. 20x
Disston's Star. 25x
Leopold. 40x10x50x
Atkin's Lever. 1/2 doz No. 1, \$6.00
Atkin's Criterion. 1/2 doz No. 1, \$6.00
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00. 40x10x
Avery's Saw Set and Punch. 50x
Chieftain Co.'s Superior. 1/2 doz \$7.00
Chieftain Co.'s Royal. 1/2 doz \$7.50
Crescent. 1/2 doz \$2.00
Lloyd's Acme. 1/2 doz \$15.40x10x

Sharpeners, Knife—

Larkins'. 40x
Applewood Handles. 1/2 doz. \$6.00, 40x
Rosewood or Cocobola. 1/2 doz. \$9.00, 40x

Shaves, Spoke—

Iron. 45x
Wood. 50x
Bailey's (Stanley R. & L. Co.). 40x10x
Stearns'. 30x10x
Cincinnati. 25x10x
Goodell's 1/2 doz. \$9.00. 25x

Shears—

American (Cast) Iron. 75x10x75x10x5x
Barnard's Lamp Trimmers. 1/2 doz. \$3.75
Tinner's. 20x25x
Seymour's, list Dec. 1891. 60x10x10x60x10x10x5x
Heinisch's, list Dec. 1891. 60x10x10x60x10x10x5x
Heinisch's Tailor's Shears. 33x5x
Cast Steel Trimmers: 80x80x10x
First quality. 80x10x80x10x10x
Second quality. 10x10x
Acme Cast Shears. 10x10x
Diamond Cast Shears. 10x10x
Clipper. 10x10x
Victor Cast Shears. 75x10x75x10x5x
Howe Bros. & Hulbert, Solid Forged Steel. 40x
Chicago Drop Forge & F. Co., Solid Steel Forged. 60x
Davenport Cutlery Co. 60x60x10x
Clausen Shear Co., Japanned. 70x
Clausen Shear Co., Nicked, same list. 60x
Galvanic 3/4 to 1 in. 1/2 doz. \$1.00 1/2 inch
Electric Cutlery Co. Net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw. 1/2 doz. \$18.00, 20x10x
Disston's Pruning Hook, 1/2 doz. \$12.00
E. S. Lee & Co.'s Pruning Tools. 20x10x
Pruning Shears, Henry's Pat. 1/2 doz. \$3.75x
Henry's Pruning Shears, 1/2 doz. \$4.25
Wheeler, M. & C. Co., Combination. 1/2 doz \$12.00, 20x
Dunlap's Saw and Chisel, 1/2 doz \$8.50, 30x
J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25
P. S. & W. Co. 60x

Tinner's, &c.—

Shears and Snips (P. S. & W.). 20x25x
Snips, J. Mallinson & Co. 33x5x

Sheaves—

Sliding Door—
M. W. Co., list July, 1888. 50x10x60x5x
R. & E., list Dec. 18, 1885. 55x20x
Corbin's list. 60x10x25x
Patent Roller. 60x10x25x
Patent Roller, Hatfield's. 75x
Russell's Anti-Friction, list Dec. 18, 1885. 60x25x
Moore's Anti-Friction. 50x

Sliding Shutter—

R. & E., list Dec. 18, 1885. 60x10x25x
Sargent's list. 60x10x
Reading list. 60x10x10x

Shells—

First quality 4, 8, 10 and 12 gauge. 25x10x25x
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list). 20x10x25x
Prize. 40x25x
Star, Club, Rival and Climax Brands. 33x10x25x
Smokeless brand, 12, 10, 16 gauge. 33x10x25x
Trap brand, 12 and 10 gauge. 33x10x25x
Selbold's Comb. Shot Shells. 15x25x
Brass Shot Shells, list quality. 60x25x
Brass Shot Shells, Club, Rival, Climax. 65x25x

Shells Loaded—

Standard list, July 19, 1890. 40x10x10x40x10x10x5x

Ship Tools—

L. & I. J. White. 20x5x

Shoes, Horse, Mule, &c.—**Horse—**

Burden's, Perkins', Phoenix, Diamond State & Bryden's Boss, at factory. \$4.00
Bryden's Frog Pressure, at factory. \$5.00

Mule—

Add \$1 1/2 keg to above prices.

Ox Wrought—

Ton lots. 1/2 doz \$1.40
1000 lb lots. 1/2 doz \$1.40
500 lb lots. 1/2 doz \$1.40

Shot—

Drop, up to B, 25-b bag. \$1.40
Drop, up to B, 5-b bag.35
Drop, B and larger, 25-b bag. 1.65
Drop, B and larger, 5-b bag.40
Buck and Chilled, 25-b bag. 1.65
Buck and Chilled, 5-b bag.40
Dust Shot, 25-b bag. 2.00
Dust Shot, 5-b bag.45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885. 20x
NOTE—Jobbers frequently give 5x75x extra on above.
Griffith's Black Iron. 50x10x
Griffith's C. S. 60x10x10x
Griffith's Solid C. S. R. R. Goods. 20x
St. Louis Shovel Co. 30x20x75x
Hussey, Blinn & Co. 15x25x
Hubbard & Co. 20x20x75x
Lehigh Mfg. Co. 50x10x
H. M. Myers Co. 30x
Payne Pettibone & Son. 33x45x
Remington's (Lowman's) Pat. 30x10x40x
Rowland's Black Iron. 50x10x
Rowland's Steel. 60x50x60x10x
Terra Haute Shovel & Tool Co. 25x

Shovels and Tongs—

Iron Head. 60x10x60x10x5x
Brass Head. 60x10x10x

Sieves—

Mann's Tin Rim. 50x25x
Buffalo Metallic, S. S. & Co. 50x25x
Shaker (Barber's Pat.) Flour Sifters. 1/2 doz \$2.00; 1/2 gr \$21.60
Electric. 1/2 gr \$21.00
A. & W. Sifters. 1/2 doz \$2.00
Hunter's. 1/2 doz \$2.00

Sieves, Wooden Rim—

Mesh 18, Nested, 1/2 doz. \$0.80
Mesh 20, Nested, 1/2 doz.95
Mesh 24, Nested, 1/2 doz. 1.15

Skins, Thimble—

Western list. 75x5x75x10x
Columbus Wrt. Steel. Special net prices
Baldbrookdale Iron Co. 60x
Seneca Falls Pattern. 60x
Utica P. S. T. Skins. 60x
Utica Turned and Fitted. 35x

Slates—

School, by case. 50x10x50x10x10x

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....	65¢
Fitch's (Bristol).....	50¢10¢
Hotchkiss.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covert.....	50¢10¢5¢2¢
Covert, New Patent.....	50¢10¢5¢2¢
Covert, New R. E.....	60¢10¢5¢2¢
Covered Spring.....	60¢10¢10¢
E. Covert's Triumph.....	33¢½

Snaths, Scythe—

List.....	50¢50¢5¢
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Soldering Irons—

See Irons, Soldering.

Spittoons, Cuspidors, &c.**Standard Fiberware—**

Cuspidors, 8½-inch, ½ doz., No. 5, 8; No. 5X, 80.	
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 80.	

Spoke Shaves—

See Shaves, Spoke.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—**Tinned Iron—**

Basting, Cen. Stamp Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp Co.'s list.....	70¢10¢
Buffalo, S. S. & Co.....	33¢½2¢

Silver Plated—

4 months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers.....	40¢15¢
C. Rogers & Bros.....	40¢15¢
Rogers & Bros.....	40¢15¢
Reed & Barton.....	40¢40¢5¢
Wm. Rogers Mfg. Co.....	40, 15¢5¢
Simpson, Hall, Miller & Co.....	40, 15¢5¢
Holmes & Edwards Silver Co.....	40, 15¢5¢
L. Boardman & Son.....	50¢12¢½

Miscellaneous—

Holmes & Edwards Silver Co:	
No. 67 Mexican Silver.....	50¢10¢5¢
No. 30 Silver Metal.....	50¢10¢5¢
No. 24 German Silver.....	50¢10¢5¢
No. 50 Nickel Silver.....	50¢5¢
No. 49 Nickel Silver.....	50¢10¢5¢
Wm. Rogers Mfg. Co:	
Rogers' Silver Metal.....	50¢10¢5¢
185 Rogers' German Silver.....	50¢5¢
225 Rogers' Nickel Silver.....	50¢5¢
German Silver.....	50¢5¢5¢
German Silver, Hall & Elton.....	50¢5¢ cash
Nickel Silver.....	50¢5¢5¢10¢10¢
Britannia.....	60¢5¢5¢
Boardman's Nickel Silver, list July 1, 1891.....	60¢7¢5¢
Boardman's Britannia Spoons, case lots.....	60¢5¢ cash

Spring—**Door—**

Torrey's Rod, 39 in.....	½ doz \$1.30@1.25
Gray's, ½ gr.....	25¢
Bee Rod, ½ gr.....	20¢25¢
Warner's No. 1, ½ doz.....	25¢50¢
Warner's No. 1, ½ doz.....	25¢50¢
Gem (Coll), list April 19, 1886.....	10¢15¢
Star (Coll), list April 19, 1886.....	20¢20¢5¢
Victor (Coll).....	60¢10¢60¢10¢5¢
Champion (Coll).....	60¢10¢60¢10¢10¢
Cowd's, No. 1, ½ doz.....	\$18.00, No. 2, \$15.00
Rubber, complete, ½ doz.....	\$4.50, 55¢10¢
Hercules.....	50¢50¢10¢

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....	60¢10¢10¢
Cliff's Bolster Springs.....	25¢

Squares—

Steel and Iron.....	80¢10¢80¢10¢10¢
Nickel-Plated.....	
Try Square and T Bevels.....	60¢10¢10¢
Diston's Try Square and T Bevels.....	50¢
Winterbottom's Try and T Bevels.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	25¢
Avery's Flush Bevel Squares.....	40¢
Avery's Bevel Protractor.....	50¢

Squeezers—**Fodder—**

Blair's.....	½ doz \$2.00
Blair's "Climax".....	½ doz \$1.25

Lemon—

Porcelain Lined, No. 1.....	½ doz \$6.00
Wood, No. 2.....	25¢30¢
Wood, Common.....	½ doz \$1.70@1.75
Dunlap's Improved.....	½ doz \$1.75, 20¢
Samuels.....	No. 1, \$5.00; No. 2, \$4.12
118 ½ doz.....	25¢10¢
Jennings' Star.....	½ doz \$2.50
The Boss.....	½ doz \$2.50
Dean's.....	No. 1, ½ doz \$3.50; 2, \$3.35; 3, \$1.00; Queen, \$2.50
Little Giant.....	50¢50¢5¢
King.....	40¢5¢
Hotchkiss Straight Flash.....	½ doz \$12.00
Silver & Co., Glass.....	½ gro. \$9.00
Manny Lemon Juice Extractor.....	Standard ½ doz \$0.75@1.00
Improved.....	½ doz \$2.00

Standard Fiber Ware—

See Ware, Standard Fiber.

Staples—**Blind—**

Barbed, ½ in. and larger.....	7¢7¢4¢
Barbed, ¾ in.....	8¢8¢4¢
Fence Staples, Galvanized.....	Same price
Fence Staples, Plain.....	See Trd. Rep

Steelyards.....40¢10¢50¢**Stocks and Dies—**

Blacksmith's:	
Waterford Goods.....	35¢
Butterfield's Goods.....	35¢
Lightning Screw Plate.....	25¢30¢
Reece's New Screw Plates.....	25¢30¢
Reversible Ratchet.....	30¢
Gardner.....	25¢

Stops, Bench—

Morrill's.....	½ doz \$9, 50¢
Hotchkiss's.....	½ doz \$5, 10¢10¢10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢10¢5¢	
McGill's, ½ doz \$3.....	10¢
Cincinnati.....	25¢10¢
Terrell's Nos. 1 and 2, ½ doz.....	\$3, No. 3, \$3.00

Stone—**Sythe Stones—**

Pike Mfg. Co., list April, 1892.....	33¢½
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Oil Stones, &c.—

Pike Mfg. Co:	
Hindustan No. 1.....	8¢
Sand Stone.....	5¢
Washita Stone, Extra.....	50¢
Washita Stone, No. 1.....	30¢
Washita Stone, No. 2.....	30¢
Washita Slips, Extra.....	80¢
Washita Slips, No. 1.....	70¢
Arkansas Stone, No. 1, 3 to 5½ in.....	\$2.30
Arkansas Stone, No. 1 5½ to 8 in.....	\$3.50
Turkey Oil Stone, 4 to 8 in.....	\$2.00
Turkey Slips.....	½ doz 13¢
Lake Superior, Chase.....	½ doz 20¢
Lake Superior Slips, Chase.....	½ doz 20¢

Stove Polish—

See Polish, Stove.

Stretchers, Carpet—

Cast Steel, Polished.....	½ doz \$2.25
Cast Iron, Steel Points.....	½ doz \$2.00
Socket.....	½ doz \$1.75
Bullard's.....	25¢25¢10¢

Strops, Razor—

Genuine Emerson.....	40¢60¢5¢
Imitation.....	½ doz \$2.00, 20¢10¢5¢
Torrey's.....	20¢
Badger's Belt and Com.....	½ doz \$2.00
Lamont Combination.....	½ doz \$4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50¢	
Electric Cutlery Co.....	Net

Stuffers or Fillers, Sausage—

Miles' Challenge, ½ doz.....	\$20, 50¢50¢5¢
Perry.....	½ doz, No. 1, \$15.00; No. 2, \$21.00
Draw Cut No. 4, each.....	\$30.00, 20¢
Enterprise Mfg. Co.....	20¢10¢30¢
Silver's.....	40¢10¢

Sweepers, Carpet and Lawn—**Carpet—**

Bissell No. 5.....	½ doz \$17.00
Bissell No. 8.....	½ doz \$20.00
Bissell, Grand.....	½ doz \$30.00
Standard.....	½ doz \$24.00
Domestic.....	½ doz \$21.00
Domestic, No. 2.....	½ doz \$22.00
Grand Rapids.....	½ doz \$24.00
Crown Jewel, No. 1.....	\$18.00; No. 2, \$20.00
Magie.....	½ doz \$15.00
Improved Parlor Queen.....	½ doz \$27.00
Nickel.....	½ doz \$24.00
Japanned.....	½ doz \$24.00
Excelsior.....	½ doz \$22.00
Garland.....	½ doz \$18.00
Parlor Queen.....	½ doz \$24.00
Housewife's Delight.....	½ doz \$15.00
Queen.....	½ doz \$16.00
Queen, with band.....	½ doz \$18.00
King.....	½ doz \$30.00
Weed, Improved.....	½ doz \$18.00
Hub.....	½ doz \$16.00
Cog Wheel.....	½ doz \$16.00
Easy.....	½ doz \$22.00
Monarch.....	½ doz \$22.00
Goshen.....	½ doz \$21.00
Ladies' Friend.....	½ doz \$15.00
Advance.....	½ doz \$18.00
Supreme.....	½ doz \$22.00

Lawn—

Thompson Mfg. Co.....	30¢
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Tacks, Brads, &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks.....	
American, Blue.....	60¢5¢
American, Tin'd and Cop'd.....	70¢
Steel, Bright and Blue.....	60¢5¢
Steel, Tinned and Coppered.....	70¢
Swedes Iron, Blue.....	72¢5¢
Swedes Iron, Tinned.....	75¢
American Iron Tacks, Domestic.....	60¢5¢
S. S., Blue.....	60¢5¢
S. S., Tinned.....	70¢
Lanc., Blue.....	55¢
Lanc., Tinned.....	60¢
Gimp and Lace Tacks.....	62¢5¢
S. S., Blue.....	62¢5¢
S. S., Tinned.....	65¢
Lanc., Blue.....	55¢
Lanc., Tinned.....	60¢
Basket and Trimmers' Tacks.....	
Lanc.....	52¢5¢
S. S.....	60¢
Hungarian Nails.....	50¢
Common and Patent Brads.....	55¢
Leathered Tacks.....	10¢
Brush Tacks, S. S.....	60¢
Looking Glass Tacks, S. S.....	65¢
Picture-Frame Points, S. S.....	35¢
Finishing Nails.....	60¢
Trunk and Clout Nails.....	
Black.....	62¢4¢
Tinned or Coppered.....	60¢5¢
Basket Nails.....	60¢
Chair Nails.....	52¢4¢
Cigar Box Nails.....	45¢
Tin Capped Nails.....	50¢

Miscellaneous—

Double Point.....	90¢90¢10¢
Wire Carpet Nails.....	50¢10¢
Plymouth Rock Steel Target Tacks.....	25¢

Wire Brads and Nails—

Steel-Wire Brads, R. & E. Mfg. Co.'s list.....	50¢10¢
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See also Nails, Wire.

Tapes, Measuring—

American.....	40¢40¢5¢
Spring.....	25¢30¢
Chesterman's, Regular list.....	25¢30¢

Thermometers—

Tin Case.....	80¢80¢10¢
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Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list.....	50¢10¢5¢
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Tinners' Shears, &c—

See Shears, Tinners' &c.

Tinware—

Stamped, Japanned and Piced, list Jan 20, 1887.....	70¢10¢70¢25¢
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Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tools—****Coopers'—**

Bradley's.....	20¢
Barton's.....	20¢20¢5¢
L. & J. J. White.....	20¢5¢
Albertson Mfg. Co.....	25¢
Beatty's.....	30¢
Sandusky Tool Co.....	30¢50¢5¢
Shaves Cincinnati Tool Co.....	20¢

Lumber—

Ring Peavies, "Blue Line".....	½ doz \$20.00
Ring Peavies, Common.....	½ doz \$18.00
Steel Socket Peavies.....	½ doz \$21.00
Mail Iron Socket Peavies.....	½ doz \$19.00
Cant Hooks, "Blue Line".....	½ doz \$16.00
Cant Hooks, Common Finish.....	½ doz \$14.00
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish.....	\$16.00
Cant Hooks, Mail Socket Clasp, Common Finish.....	½ doz \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....	½ doz \$12.00
Cant Hooks, Clip Clasp, Common Finish.....	½ doz \$12.00
Hand Spikes.....	½ doz 6 ft., \$15.00; 8 ft., \$20.00
Pike Poles, Pike & Hook.....	½ doz, 12 ft., \$11.50; 16 ft., \$12.50; 18 ft., \$14.50; 20 ft., \$15.50
Pike Poles, Pike only.....	½ doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
Pike Poles, not ironed.....	½ doz, 12 ft., \$9.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00
Setting Poles.....	½ doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks.....	½ doz \$18.00

Saw—

Atkins' Perfection.....	½ doz \$12.00
Atkins' Excelsior.....	½ doz \$6.00
Atkins' Giant.....	½ doz \$4.00

Tobacco Cutters—

See Cutters, Tobacco.

Transom Lifters—

See Lifters, Transom.

Traps—**Game—**

Newhouse.....	40¢40¢5¢
Oneida Pattern.....	70¢10¢
Game, Blake's Patent.....	40¢10¢5¢

Mouse and Rat—

Mouse Wood, Choker, ½ doz holes, 9@10¢	
Mouse, Round Wire.....	½ doz \$1.50, 10¢
Mouse, Cage, Wire.....	½ doz \$2.50, 10¢
Mouse, Catch-em-alive.....	½ doz \$2.50, 15¢
Mouse, Bonanza.....	½ doz 0.90@1.00
Rat, Decoy.....	½ gr \$10.00, 10¢
Ideal.....	½ gr \$10.00
Cyclone.....	½ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....	½ doz, 75¢; in full cases, ½ doz \$0.65¢
Hotchkiss Imp. Rat Killer.....	½ gro \$18.50
Hotchkiss New Rat Killer.....	½ gro \$16.50
Schuyler's Rat Killer.....	½ gro \$15.00

Triers—

Butter and Cheese.....	25¢
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Trimmers, Spoke—

Bonney's.....	½ doz \$10.00, 50¢
Stearns'.....	20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00, ½ doz.....	55¢10¢
Douglas'.....	½ doz \$0.00, 20¢
Cincinnati.....	25¢

Trowels—

Lothrop's Brick and Plastering.....	30¢10¢5¢35¢
Reed's Brick and Plastering.....	15¢
Diston's Brick and Plastering.....	25¢25¢5¢
Peace's Plastering.....	25¢25¢5¢
Clement & Maynard's.....	20¢20¢5¢
Rose's Brick.....	15¢20¢
Brade's Brick.....	25¢
Worral's Brick and Plastering.....	20¢
Garden.....	70¢
Cleves' Angle Trowel, ½ gro, No. 1, 85¢; No. 2, \$30; No. 3, \$15, net @ 10%	

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....	40¢
Thompson Mfg. Co.....	25¢

Tubes, Boiler—

See Pipe.

Twine—

No. 9, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	25¢ 31¢
No. 12, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	22¢ 30¢
No. 18, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	20¢ 29¢
No. 24, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	20¢ 29¢
No. 36, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	18¢ 28¢
No. 204 Mattress, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls.....	52¢54¢
Chalk Line, Cotton, $\frac{1}{2}$ m Balls.....	25¢
Mason Line, Linen, $\frac{1}{2}$ m Balls.....	55¢
2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ m Balls (Spring Twine).....	15¢
3-Ply Hemp, 1 m Balls.....	16¢10¢
4-Ply Hemp, $\frac{1}{2}$ m Balls.....	15¢15¢
Cotton Wrapping, 5 Balls to m.....	15¢10¢
3, 4 and 5 Ply Jute, $\frac{1}{2}$ m Balls.....	10¢
"Paper".....	6¢
Cotton Mops, 9, 12 and 15 P to doz.....	14¢14¢

Washers—

Size holes..... 5-16 3/4 1/2 3/8 to 1 3/4
Washers..... 6 5 3.50 3
In lots less than 200 b. 1/2 b, add 1/4 c, 5-b
boxes 1¢ to list.

Wedges—

Iron..... 1/2 b 3 1/2 c
Steel..... 1/2 b 3 3/4 c

Weights, Sash—

Solid Eyes..... 1/2 ton \$18.00 @ \$19.00

**Well Buckets, Galvan-
ized—See Buckets, Well, Gal-****Wheels, Well—**

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire and Wire Goods—**Iron—**

Br. & Ann., Nos. 0 to 18..... 75¢ @ 80¢
Cop'd, Nos. 0 to 18..... 75¢ @ 75¢ @ 10¢

Galv., Nos. 0 to 18..... 70¢ @ 70¢ @ 10¢
Tin'd, Tin'd list, Nos. 0 to 18. 70¢ @ 70¢ @ 10¢

Stone,

Br. and Ann'd, Nos. 16 to 18..... 80¢
Bright and Ann'd, Nos. 19 to 26..... 80¢ @ 5¢
Br. and Ann'd, Nos. 27 to 36..... 82¢ @ 5¢
Tin'd..... 82¢ @ 5¢

Tinned Broom Wire, 18 to 21, 1/2 b..... 4 1/2 c
Galvanized Fence, Nos. 8 and 9..... 70¢ @ 10¢
Brass, list Jan. 18, 1884..... 25¢ @ 33 1/2 c
Copper, list Jan. 18, 1884..... 33 1/2 c @ 40 c

Annealed Wire on Spools..... 60¢
Mallin's Steel and Tin'd on Spools..... 60¢
Mallin's Brass and Cop. on Spools..... 50¢
Tate's Spooled, Tin'd & Annealed..... 60¢ @ 5¢
Tate's Spooled Cop. and Brass..... 50¢
Cast Steel Wire..... 50¢
Stubs Steel Wire..... \$6.00 to \$2.30
Steel Music Wire, 12 to 30..... 60¢ @ 70¢
Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list..... 80¢ @ 20¢ @ 85¢

Wire Cloth and Netting—

Painted Screen Cloth, good quality, 1/2
100 sq. ft., \$1.40

Galvanized Wire Netting..... 70¢ @ 10¢ @ 75¢

Wire, Barb—

See Trade Report.

Wire Rope—See Rope, Wire.**Wrenches—**

American Adjustable..... 40¢
Baxter's Adjustable "S"..... 40¢ @ 10¢ @ 50¢
Baxter's Diagonal..... 40¢ @ 10¢ @ 50¢
Coes' Genuine..... 50¢ @ 3¢
Coes' "Mechanics"..... 50¢ @ 10¢ @ 3¢
Girard Standard..... 65¢ @ 10¢
Lamson & Sessions' Engineers'..... 60¢ @ 10¢
Lamson & Sessions' Standard..... 70¢ @ 10¢
P. S. & W. Agricultural..... 75¢ @ 10¢
Girard Agricultural..... 75¢ @ 10¢ @ 10¢
Lamson & Sessions' Agric'l..... 75¢ @ 10¢ @ 10¢

Bemis & Call's:
Pat. Combination..... 35¢
Merrick's Pattern..... 35¢
Briggs's Pattern..... 25¢
Cylinder or Gas Pipe..... 40¢ @ 5¢
No. 3 Pipe..... 40¢ @ 10¢

Alken's Pocket (Bright)..... \$8.00, 50¢ @ 10¢
The Favorite Pocket..... 1/2 doz., \$4.00, 40¢
Webster's Pat. Combination..... 25¢
Boardman's..... 20¢ @ 10¢
Always Ready..... 25¢ @ 5¢
Alligator..... 50¢
Donohue's Engineer..... 20¢ @ 10¢
Acme, Bright..... 50¢ @ 2¢
Acme, Nickle..... 40¢ @ 2¢
Hercules..... 70¢ @ 70¢ @ 5¢
Walker's..... 55¢ @ 3¢
Diamond Steel..... 55¢ @ 3¢
Cincinnati Brace Wrenches..... 25¢ @ 10¢
Taft's Vise Wrench..... 55¢ @ 10¢ @ 3¢

Am. Wringer Co.'s list, July 1, '92..... 2¢ cash
Colby Wringer Co., list Sept. 1, '91..... 2¢ cash
Lovell Mfg. Co., list Jan. 1, 1892..... 2¢ cash
Peerless Mfg. Co., list Feb., 1892..... 2¢ cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892..... 80¢ @ 25¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable**Oils—**

Linseed, City, raw, per gal. @ 40
Linseed, City, boiled..... @ 43
Linseed, Western, raw..... 38 @ 39
Lard, City, Extra Winter..... 65 @ 66
Lard, City, Prime..... 62 1/2 @
Lard, City, Extra No. 1..... 50 @ 55
Lard, City, No. 1..... 40 @ 45
Lard, Western, prime..... 62 @
Cotton-seed, Crude, prime..... @ 28
Cotton-seed, Crude, off
grades..... 26 @ 27
Cotton-seed, Summer Yel-
low, prime..... 31 1/2 @ 32
Cotton-seed, Summer Yel-
low, off grades..... 30 @ 31
Sperm, Crude..... 68 @
Sperm, Natural Spring..... 67 @ 70
Sperm, Bleached Spring..... 72 @ 75
Sperm, Natural Winter..... 73 @ 76
Sperm, Bleached Winter..... 78 @ 81
Whale, Crude..... @ 45
Whale, Natural Winter..... 55 @ 56
Whale, Bleached Winter..... 58 @ 59
Whale, Extra Bleached..... 59 @ 60
Sea Elephant, Bleached
Winter..... 62 @ 63
Menhaden, Crude, Sound..... 30 @ 31
Menhaden, Crude, Southern..... @
Menhaden, Light Pressed..... 37 @
Menhaden, Bleached W'ter..... 38 @
Menhaden, Extra Bleached..... 40 @ 42
Tallow, City, prime..... 42 1/2 @ 43
Tallow, Western, prime..... 42 1/2 @ 43
Cocoonut, Ceylon..... 5 @ 5 1/2
Cocoonut, Cochiti..... 5 1/2 @ 5 1/2
Cod, Domestic..... 38 @ 40
Cod, Foreign..... 42 @ 45
Red Elaine..... 34 @ 36
Red Saponified..... 44 @ 46
Bank..... 35 @ 36
Straits..... 36 @ 37
Olive, Italian, blbls..... 58 @ 60
Neatsfoot, prime..... 50 @ 55
Palm, prime, Lagos..... 54 @ 54 1/2

Mineral Oils—

Black, 29 gravity, 25 @ 30
cold test..... per gal. 7 @ 7 1/2
Black, 29 gravity, 15 cold
test..... 7 1/2 @ 8
Black, 29 gravity, summer..... 8 @ 8 1/2
Cylinder, light, filtered..... 14 @ 10

Cylinder, dark, filtered..... 10 @ 13
Paraffine, 23 1/2 @ 24 gravity..... 11 1/2 @ 12
Paraffine, 25 gravity..... 10 1/2 @ 11
Paraffine, 28 gravity..... 8 @ 8 1/2
Paraffine, red..... 9 @ 1 1/2

Paints and Colors—

Barytes, Foreign, 1/2 ton..... \$22.00 @ 24.00
Barytes, Amer. floated..... 29.00 @ 32.00
Barytes, Amer. No. 1..... 15.00 @ 17.00
Barytes, Amer. No. 2..... 13.00 @ 15.00
Barytes, Amer. No. 3..... 11.00 @ 12.00
Blue, Celestial..... 6 @ 8
Blue, Chinese..... 40 @ 50
Blue, Prussian..... 25 @ 40
Blue, Ultramarine..... 8 @ 25
Brown, Spanish..... 1/2 @ 1
Brown, Vandyke, Amer..... 3 @ 3 1/2
Brown, Vandyke, English..... 6 @ 8
Carmine, No. 40, in bulk..... 3.10 @
Carmine, No. 40, in boxes
or barrels..... 3.20 @
Carmine, No. 40, in ounce
bottles..... 4.20 @
Chalk, in bulk..... 1/2 ton..... @ 2.00
Chalk, in blbls., 100 b..... 33 @ 40
China Clay, English..... 1/2 ton..... 13.00 @ 18.00
Cobalt Oxide, prep'd..... 9.00 @ 11.00
Cobalt Oxide, black.....
lots 100 b. 2.50 @
Cobalt Oxide, black.....
lots 100 b. 2.65 @ 2.90
Green, Paris, in bulk..... 13 @ 15 1/2
Green, Paris, 170 @ 175 b..... 14 @ 16
Green, Paris, small pack..... 15 1/2 @ 22
Green, Chrome, ordinary..... 6 @ 12
Green, Chrome, pure..... 22 @ 25
Lead, Eng., B. B. white..... 8 1/2 @ 10
Lead, Amn. White, dry or in oil:
Kegs, lots less than 500 b..... 7 1/2 @ 7 1/2
Kegs, lots 500 b to 5 tons..... 6 1/2 @ 7
Kegs, lots 5 tons to 12 tons..... 6 1/2 @ 6 1/2
Kegs, lots 12 tons and over..... 6 1/2 @ 6 1/2
Lead, White, in oil, 25 b tin
pails, add to keg price..... @ 1/2
Lead, White, in oil, 12 1/2 b tin
pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 b as-
sorted tins, add to keg price..... @ 1/4
Lead, Red, blbls. and 1/2 bbls..... 6 1/2 @ 7 1/2
Lead, Red, kegs..... 6 1/2 @ 7 1/2
Litharge, kegs..... 6 1/2 @ 7 1/2
Litharge, blbls. and 1/2 bbls..... 6 1/2 @ 7 1/2

TERMS, &c.—Lead and Litharge.—On
lots of 500 b or over, 60 days' time or 2 1/2
% discount for cash if paid within 15 days
of date of invoice.

Ocher, Rochelle..... 1.35 @ 1 1/2
Ocher, French Washed..... 1 1/2 @ 2 1/2
Ocher, German Washed..... 1 1/2 @ 3
Ocher, American..... 1 1/2 @ 1 1/2
Orange Mineral, English..... 8 1/2 @ 9
Orange Mineral, French..... 10 @ 10 1/2
Orange Mineral, German..... 8 1/2 @ 9
Orange Mineral, American..... 8 1/2 @ 8 1/2
Paris White, English Chf.....
stone..... 1.00 @ 1.15
Paris White, American..... 70 @ 75
Red, Indian, English..... 5 1/2 @ 7
Red, Indian, American..... 2 @ 0 1/2
Red, Turkey..... 9 @ 14
Red, Tuscan..... 9 @ 11
Red, Venetian, American.....
100 b. 1.00 @ 1.10
Red, Venetian, English..... 1.20 @ 1.35
Sienna, Italian, Burnt and
Powd., 1/2 b..... 4 @ 5
Sienna, Ital., Burnt Lumps..... 1 1/2 @ 3 1/2
Sienna, Ital., Raw, Powd..... 4 1/2 @ 5 1/2
Sienna, Ital., Raw, Lumps..... 1 1/2 @ 3 1/2
Sienna, American, Raw..... 1 1/2 @ 1 1/2
Sienna, American, Burnt and
Powdered..... 1 1/2 @ 1 1/2
Talc, French..... 1 1/2 @ 1 1/2
Talc, American..... 0 1/2 @ 1 1/2
Terra Alba, Fr'ch, 100 b..... 75 @ 80
Terra Alba, English..... 70 @ 75
Terra Alba, American No. 2..... 45 @ 50
Umber, Turkey, Burnt and
Powdered..... 3 1/2 @ 4
Umber, Turkey Bnt. Ln..... 2 1/2 @ 3
Umber, Turkey, Raw and
Powdered..... 3 1/2 @
Umber, Turkey, R'w Lumps..... 2 1/2 @ 2 1/2
Umber, Turkey, Rnt. Amer..... 1 1/2 @ 1 1/2
Umber, Turkey, R'w Amer..... 1 1/2 @ 1 1/2
Yellow, Chrome..... 10 @ 25
Vermilion, American Lead..... 11 1/2 @ 12
Vermilion, Quicks'er, bulk..... 57 @
Vermilion, Quicks'er, bags..... 58 @
Vermilion, Quicks'er am'r
pkgs..... 62 @
Vermilion, English Import..... 85 @ 90
Vermilion, Imitation, Eng..... 8 @ 35
Vermilion, Trieste..... 90 @ 92 1/2
Vermilion, Chinese..... 92 1/2 @ 95
Whiting Common, 100 b..... 37 1/2 @ 42 1/2
Whiting Gilders..... 45 @ 55

Zinc, American, dry..... 4 1/2 @ 5
Zinc, French, Red Seal..... 7 1/2 @
Zinc, French, Green Seal..... 9 @
Zinc, French, V. M. X..... @ 7
Zinc, Antwerp, Red Seal..... 7 1/2 @
Zinc, Antwerp, Green Seal..... 7 1/2 @
Zinc, German, L. Z. O..... 6 1/2 @ 7 1/2
Zinc, V. M. in Poppy Oil, G.
Seal, lots of 1 ton and
over..... 10 1/2 @ 11 1/2
lots less than one ton..... 11 @ 11 1/2
Zinc, V. M. in Poppy Oil,
Red Seal..... @
lots of 1 ton and over..... 10 @ 10 1/2
lots of less than 1 ton..... 10 1/2 @ 10 1/2
Discounts.—French Zinc.—Discounts to
buyers of 10 bbl. lots of one or assorted
grades, 1¢; 25 bbls., 2¢; 50 bbls., 4¢. No
discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort..... 25 @ 30
Black, Drop, English..... 12 @ 15
Black, Drop, Domestic..... 7 @ 10
Black, Lampblack, Best..... 20 @ 35
Black, Lampblack, Common..... 7 @ 18
Black, Ivory..... 8 @ 15
Blue, Chinese..... 35 @ 40
Blue, Prussian..... 20 @ 45
Blue, Ultramarine..... 12 @ 18
Brown, Vandyke..... 7 @ 12
Green, Chrome..... 8 @ 12
Green, Paris..... 16 @ 18 1/2
Sienna, Raw..... 7 @ 14
Sienna, Burnt..... 7 @ 14
Umber, Raw..... 7 @ 10
Umber, Burnt..... 7 @ 19

Putty—

In barrels and 1/2 bbls..... .013¢ @ .013¢
In tubs..... .013¢ @ .013¢
In tin cans..... .013¢ @ .022¢
In bladders..... .013¢ @ .022¢

Spirits Turpentine—

In regular bbls..... @ 28 1/2
In machine bbls..... @ 29

Glue—

Low Grade..... 8 @ 10
Cabinet..... 12 @ 14
Medium White..... 13 @ 15
Extra White..... 17 @ 20
French..... 10 @ 22
English..... 10 @ 16
Irish..... 12 @

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